ENVIRONMENTAL RESTORATION PROGRAM

LIMITED FIELD INVESTIGATION WORK PLAN

MOUND PLANT RCRA SITES, OPERABLE UNIT 7

April 1990

DEPARTMENT OF ENERGY

ALBUQUERQUE OPERATIONS OFFICE

ENVIRONMENTAL RESTORATION PROGRAM

TECHNICAL SUPPORT OFFICE

LOS ALAMOS NATIONAL LABORATORY

DRAFT

(REVISION 0)

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FIGURES

TABLES

PLATES

LIST OF ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
DOE	U.S. Department of Energy
DOE AL	U.S. Department of Energy Albuquerque Operations Office
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
NA	not applicable
NPDES	National Pollutant Discharge Elimination System
PA/SI	preliminary assessment/site inspection
RCRA	Resource Conservation and Recovery Act
RC/RA	remedial design/remedial action
RFA	RCRA Facility Assessment
RI/FS	remedial investigation/feasibility study
SMCL	secondary drinking water standard
SOP	Standard Operating Procedure
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCL	Target Compound List
TSO	Technical Support Office
VOC	volatile organic compounds

EXECUTIVE SUMMARY

Guidance for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides for limited field investigations during project scoping if available data are inadequate to develop a site conceptual model and adequately scope the project (EPA 1988). The majority of the potential release sites at the U.S. Department of Energy (DOE) Mound Plant have no documented history nor observation of contaminant releases; therefore, limited field investigations are required to identify the presence and types of contaminants, if any, and provide adequate data to plan the remedial investigation/feasibility study and write the work plan.

Limited field investigation activities discussed in this work plan will be performed as part of the DOE Albuquerque Operations Office (AL) Environmental Restoration (ER) Program. The overall mission of the ER Program is to characterize potential environmentally contaminated areas, determine the potential for migration of wastes through environmental pathways, and justify and determine any necessary remedial action. The ER Program Technical Support Office (TSO), Los Alamos, is responsible for conducting several phases of the investigation, including the completion of the preliminary assessment/site inspection, the limited field investigation, the remedial investigation/feasibility study, and verification sampling. The ER Program TSO is responsible for these site-specific investigations as well as technical direction and program management for the ER Program.

~70 were identified

This RCRA Sites, Operable Unit 7, Limited Field Investigation Work Plan covers 50 areas at Mound Plant (Figure ES.1 and Table ES.1). These areas have been in operation since November 19, 1980, or will be in operation in the near future. The areas have been identified as possible Solid Waste Management Units (SWMUs) in the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) conducted by A. T. Kearney under contract with the U.S. Environmental Protection Agency (EPA) Region V (Kearney 1988).

This plan includes the specifications for sampling multiple locations for hazardous substances included on the Target Compound List (TCL) and Target Analyte List (TAL). The TCL and TAL are subsets, of the EPA's list of hazardous substances and is given in the Contract Laboratory Program (CLP) 1987 Statement of Work. The CLP program provides analytical support requirements for EPA investigations at Superfund sites. The TCL and TAL analyses are used as a screening tool if the possible hazardous contaminants at a site are not known. This samples obtained during this investigation will be analyzed according to CLP requirements (Table ES.2).

Table ES.1 summarizes the sampling activities that will be conducted at the RCRA Sites during this limited field investigation. Table ES.2 summarizes the number of samples, types of samples, and analytical parameters.

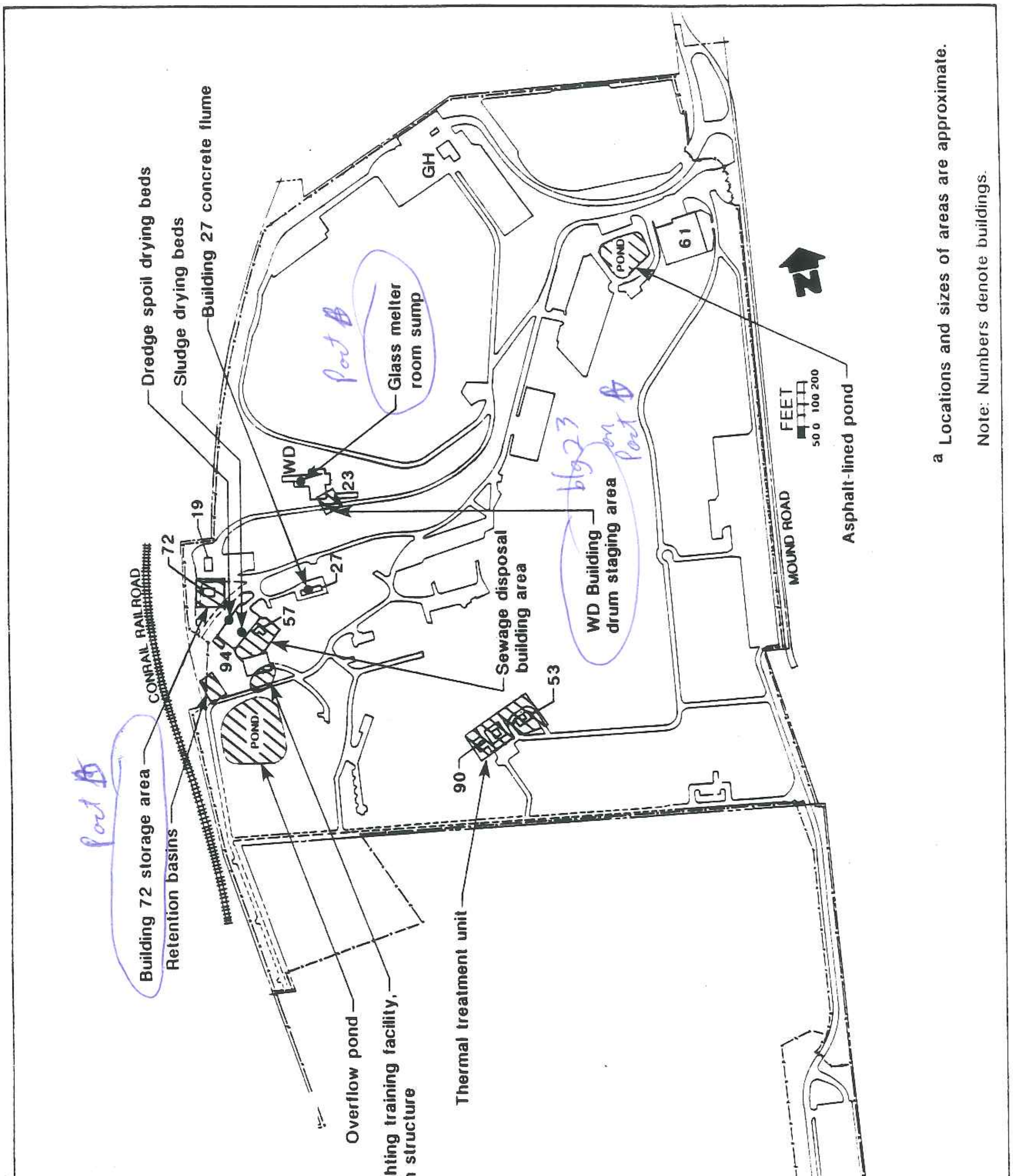

Figure ES.1. RCRA Sites, Operable Unit 7.[a] (1 of 2)

Part B

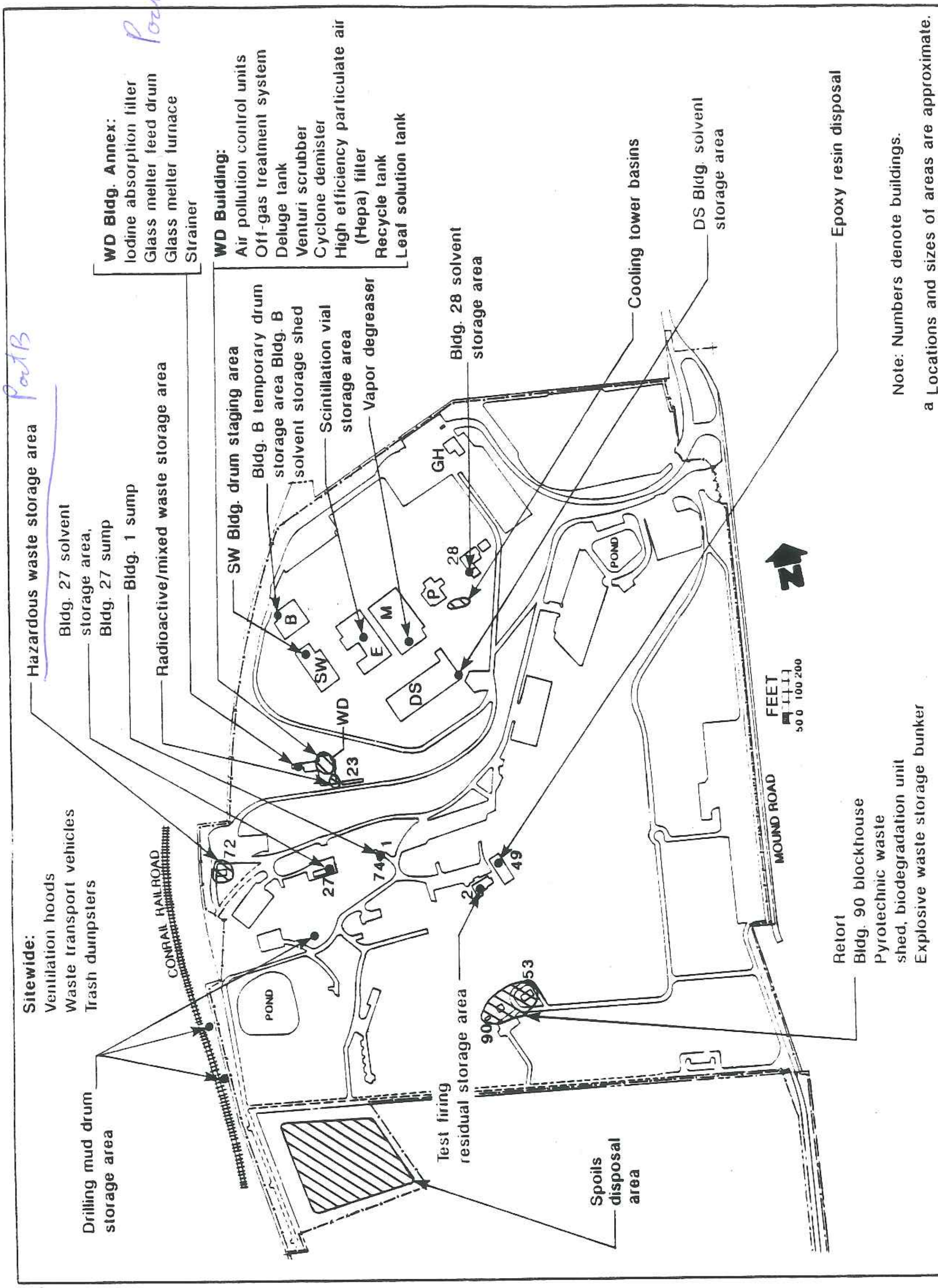

Figure ES.1. RCRA Sites, Operable Unit 7.[a] (2 of 2)

were lines ever repaired? previous leaks etc.

Table ES.1. RCRA Sites, Operable Unit 7, Activities

Area	Recommended Action	Rationale for Sampling Strategy
Underground sewer lines	Biased sampling of soil.	Possible release of hazardous contaminants at locations of leaks or cracks.
Sewage Disposal Building area	Biased sampling of soil or sediment.	Possible release of hazardous contaminants where cracks or leaks are observed.
	Air sampling at the aeration basin.	Possible air releases of organic compounds from this component.
Sludge drying beds	No sampling required.	Sampling performed in 1987.
Dredge spoil drying beds	Biased sampling of soil.	Possible release of hazardous contaminants where stained soil is observed.
Asphalt-lined pond	No sampling required.	Sampling performed in 1987.
Retention basins	No sampling required.	Sampling performed in 1987.
Overflow pond	No sampling required.	Sampling performed in 1987.
Oil burn structure	Biased sampling of soil.	Sample downgradient of the structure.
Fire-fighting training facility	Biased sampling of soil.	Sample soil in areas where stains or residue are present.
WD Building drum staging area	Biased sampling of soil.	Sample soil in areas where stains are present.
Building 72 storage area	Biased sampling of soil.	Sample soil in areas where stains are present and in the catch basins.
Glass melter room sump	Sample sediment.	Characterize hazardous contaminants in sediment.
Building 27 concrete flume	Determine integrity of flume and sample at cracks.	Possible release of hazardous contaminants due to leaks.
Thermal treatment unit	Biased sampling of ash/debris and surface soil.	Possible release of hazardous contaminants in the ash-filled drum and in nearby soil.
Spoils disposal area	No sampling recommended.	No releases documented or observed.
Scintillation vial storage area	No sampling recommended.	No releases documented or observed.
Building 28 solvent storage area	No sampling recommended.	No releases documented or observed.

Table ES.1. (continued)

Area	Recommended Action	Rationale for Sampling Strategy
DS Building solvent storage shed	No sampling recommended.	No releases documented or observed.
Building B solvent storage shed	No sampling recommended.	No releases documented or observed.
Hazardous waste storage area	No sampling recommended.	No releases documented or observed.
Radioactive/mixed waste storage area	No sampling recommended.	No releases documented or observed.
Drilling mud drum storage area	No sampling recommended.	No evidence suggesting contamination. Disposal pending DOE environmental survey analysis.
Building 27 solvent storage area	No sampling recommended.	No releases documented or observed.
Building B temporary drum storage area	No sampling recommended.	No releases documented or observed.
Test firing residual storage area	No sampling recommended.	No releases documented or observed.
Strainer	No sampling recommended.	No releases documented or observed.
Iodine absorption filter	No sampling recommended.	No releases documented or observed.
Ventillation hoods	No sampling recommended.	Releases are regulated by Regional Air Pollution Control Authority.
Retort	No sampling recommended.	No releases documented or observed.
Building 90 blockhouse	No sampling recommended.	No waste residue is produced or stored here.
Pyrotechnic waste shed	No sampling recommended.	No releases documented or observed.
Biodegradation unit	No sampling recommended.	No releases documented or observed.
Explosive waste storage bunker	No sampling recommended.	No releases documented or observed.
Building 1 sump	No sampling recommended.	No releases documented or observed.

Table ES.1. (continued)

Area	Recommended Action	Rationale for Sampling Strategy
Building 27 sump	No sampling recommended.	No releases documented or observed.
Waste transport vehicles	No sampling recommended.	No releases documented or observed.
Cooling tower basins	No sampling recommended.	No releases documented or observed.
Glass melter feed drum	No sampling recommended.	No releases documented.
Trash dumpsters	No sampling recommended.	No releases documented.
Vapor degreaser	No sampling recommended.	No releases documented or observed.
SW Building drum staging area	No sampling recommended.	No releases documented or observed.
Glass melter furnace	No sampling recommended.	No releases documented or observed.
Air pollution control units off-gas treatment system	No sampling recommended.	No releases documented or observed.
Epoxy resin disposal	No sampling recommended.	Quantities are minute.

Table ES.2. RCRA Sites, Operable Unit 7, Sample Parameters

Area	Sample Type	Number of Samples	Analytical Parameters
Underground sewer lines	Subsurface soil	14	Total TCL/TAL[b], HMX, RDX, and PETN
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b], HMX, RDX, and PETN
	Ambient blank	1	Volatile organics
	Field duplicate	1	TCL/TAL semivolatile organics, metals, and pesticides/PCBs; HMX, RDX, and PETN
	Decontamination water	1	Volatile organics
Sewage Disposal Building area	Sediment	TBD[c]	Total TCL/TAL[b], HMX, RDX, and PETN
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b], HMX, RDX, and PETN
	Decontamination water	1	Volatile organics
	Air	4	TCL volatile and semivolatile organics
	Duplicate (air)	1	TCL volatile and semivolatile organics
	Trip blank (air)	1	TCL volatile organics
	Field blank (air)	1	TCL volatile organics
Sludge drying beds	Sampling previously performed by Mound Plant. Data will be evaluated as soon as they are available, and another monitoring well will be installed adjacent to Building 61.		
Dredge spoil drying beds	Surface soil	2	Total TCL/TAL[b]
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b]
	Ambient blank	1	Volatile organics
	Field duplicate	1	TCL/TAL semivolatile organics, metals, and PCBs/pesticides
Asphalt-lined pond	Sampling previously performed by IT Corporation. Results included in Appendix A. One monitoring well was newly installed adjacent to the pond, and another will be installed adjacent to Building 61 as part of the Miscellaneous Sites, Operable Unit 3, limited field investigation.		
Retention basins	Sampling previously performed by IT Corporation. Results included in Appendix A.		
Overflow pond	Sampling previously performed by IT Corporation. Results included in Appendix A.		

Table ES.2. (continued)

Area	Sample Type	Number of Samples	Analytical Parameters
Oil burn structure	Subsurface soil	4	Total TCL/TAL[b]
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b]
	Ambient blank	1	Volatile organics
	Field duplicate	1	TCL/TAL semivolatile organics, metals, and pesticides/PCBs
	Decontamination water	1	Volatile organics
Fire-fighting training facility	Surface soil	4	Total TCL/TAL[b]
	Subsurface soil	8	Total TCL/TAL[b]
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b]
	Ambient blank	1	Volatile organics
	Field duplicate	1	TCL/TAL semivolatile organics, metals, and pesticides/PCBs
	Decontamination water	1	Volatile organics
WD Building drum staging area	Subsurface soil	4	Total TCL/TAL[b], HMX, RDX, PETN
	Surface soil	2	Total TCL/TAL[b], HMX, RDX, PETN
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b], HMX, RDX, PETN
	Ambient blank	1	Volatile organics
	Field duplicate (surface soil sample)	1	TCL/TAL semivolatile organics, metals, and pesticides/PCBs, HMX, RDX, and PETN
	Decontamination water	1	Volatile organics
Building 72 storage area	Near-surface soil	6	Total TCL/TAL[b] and cyanide
	Trip blank[a]	1	Volatile organics
	Rinsate blank	1	Total TCL/TAL[b]
	Ambient blank	1	Volatile organics
	Field duplicate	1	TCL/TAL semivolatile organics, metals, pesticides/PCBs, and cyanide
	Decontamination water	1	Volatile organics
Glass melter room sump	Sediment	1	Total TCL/TAL[b], HMX, RDX, and PETN
Building 27 concrete flume	Soil	TBD[c]	Total TCL/TAL[b], HMX, RDX, PETN
Thermal treatment unit	Ash/debris	1	TCL/TAL metals, HMX, RDX, PBX, and PETN
	Surface soil	2	TCL/TAL metals, HMX. RDX, PBX, and PETN

Table ES.2. (continued)

Area	Sample Type	Number of Samples	Analytical Parameters
Thermal treatment unit (cont'd)	Rinsate blank	1	TCL/TAL metals, HMX, RDX, PBX, and PETN
	Field duplicate (ash/debris)	1	TCL/TAL metals, HMX, RDX, PBX, and PETN
Spoils disposal area	NA	NA	NA
Scintillation vial storage area	NA	NA	NA
Building 28 solvent storage area	NA	NA	NA
DS Building solvent storage shed	NA	NA	NA
Building B solvent storage shed	NA	NA	NA
Hazardous waste storage area	NA	NA	NA
Radioactive/mixed waste storage area	NA	NA	NA
Drilling mud drum storage area	NA	NA	NA
Building 27 solvent storage area	NA	NA	NA
Building B temporary drum storage area	NA	NA	NA
Test firing residual storage area	NA	NA	NA
Strainer	NA	NA	NA

Table ES.2. (continued)

Area	Sample Type	Number of Samples	Analytical Parameters
Iodine absorption filter	NA	NA	NA
Ventilation hoods	NA	NA	NA
Retort	NA	NA	NA
Building 90 blockhouse	NA	NA	NA
Pyrotechnic waste shed	NA	NA	NA
Biodegradation unit	NA	NA	NA
Explosive waste storage bunker	NA	NA	NA
Building 1 sump	NA	NA	NA
Building 27 sump	NA	NA	NA
Waste transport vehicles	NA	NA	NA
Cooling tower basins	NA	NA	NA
Glass melter feed drum	NA	NA	NA
Trash dumpsters	NA	NA	NA
Vapor degreaser	NA	NA	NA
SW Building drum staging area	NA	NA	NA

Table ES.2. (continued)

Area	Sample Type	Number of Samples	Analytical Parameters
Glass melter furnace	NA	NA	NA
Air pollution control units off-gas treatment system	NA	NA	NA
Epoxy resin disposal	NA	NA	NA
Summary of samples from all areas[d]	Soil	39	Total TCL/TAL[b]
		24	HMX, RDX, and PETN
		6	Total TCL/TAL[b] and cyanide
		4	TCL/TAL metals
		5	TCL/TAL semivolatile organics, metals, and pesticides/PCBs
		1	TCL/TAL semivolatile organics, metals, pesticides/PCBs, and cyanide
	Water	7	Total TCL/TAL[b]
		19	Volatile organics
		4	HMX, RDX, and PETN
		1	TCL/TAL metals
	Air	4	TCL volatile and semivolatile organics
		1	TCL volatile and semivolatile organics
		1	TCL volatile organics
		1	TCL volatile organics

[a]The number of trip blanks given is approximate.
[b]Total TCL/TAL is volatile organics, semivolatile organics, metals, and PCBs/pesticides.
[c]To be determined - samples will be collected if cracks are identified and soil samples can be obtained.
[d]Totals do not include potential samples from the Building 27 concrete flume or the Sewage Disposal Building area.
NA - Not applicable
TAL - Target Analyte List
TCL - Target Compound List
HMX - octahydro-1,3,5,7-tetranitro-s-triazine
RDX - hexahydro-1,3,5-trinitro-s-triazine
PETN - pentaerythritol tetranitrate
PCB - polychlorinated biphenyl

1. INTRODUCTION

1.1. PROGRAM DESCRIPTION

1.1.1. Program General

Mound Plant, located in Miamisburg, Ohio, is one of eight U.S. Department of Energy (DOE) Albuquerque Operations Office (AL) installations currently being evaluated by the DOE Environmental Restoration (ER) Program. The ER Program was established in 1984 to identify, assess, and remediate environmental contamination associated with release sites that were caused by spills or inadequate management of hazardous substances.

The ER Program consists of three phases patterned after the U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Program. Phase I, preliminary assessment/site inspection (PA/SI), was completed at Mound Plant in 1986 and reported on in the Installation Assessment Report (DOE 1986). Phase II, remedial investigation/feasibility study (RI/FS), is currently underway at Mound Plant. This limited field investigation is the first stage of the RI/FS. Field work is scheduled to begin in September 1990 and scheduled for completion in February 1991. Phase III, remedial design/remedial action (RD/RA), implements the remedial alternative chosen in the FS of Phase II.

The ER Program uses a staged approach in conducting remedial investigations and feasibility studies. Information from a limited first stage may be used to guide subsequent stages. In this way, the objectives of these investigations and studies may be achieved with minimal sampling.

1.1.2. Mound Plant

Potential release sites at Mound Plant were initially identified by an installation assessment (DOE 1986). Evaluation of past operational activities and waste management practices resulted in the identification of 43 sites that could have adverse impacts on the environment. Based on a record search and employee interviews, it was concluded that only 23 of the 43 sites required further action.

A Resource Conservation and Recovery Act (RCRA) preliminary review and visual site inspection also included the identification of potential release sites (Kearney 1988). The ER Program is addressing 101 potential release sites identified by the RCRA facility assessment and an additional eight sites that were added to the ER Program in April 1989. The 109 sites include the 43 sites previously identified by the installation assessment. The 109 sites have been allocated among 8 operable units, including 2 (Area B and the Seeps) that address groundwater across the entire installation (DOE 1989a). These operable units are given below.

- Area B, Operable Unit 1, addresses contamination of the Buried Valley aquifer at Mound Plant and includes three potential release sites.

- Seeps, Operable Unit 2, addresses contamination of the indurated bedrock on Main Hill at Mound Plant and includes one potential release site.

- Miscellaneous Sites, Operable Unit 3, addresses possible hazardous contamination of soils at 16 potential release sites at Mound Plant that are not currently operational, not covered by RCRA, and contain no known radioactive contamination.

- Miami-Erie Canal, Operable Unit 4, includes an area offsite, considered as one potential release site, that contains plutonium-238-contaminated sediments from a 1969 waste line break.

- Radioactively Contaminated Soils, Operable Unit 5, includes 20 areas at Mound Plant that have soils with known or suspected radioactive contamination.

- Decontamination and Decommissioning (D & D) Program (Hazardous Constituents), Operable Unit 6, includes ten potential release sites with radioactively contaminated soils. These sites are not included in the Radioactively Contaminated Soil Operable Unit because funding is provided by the D & D Program.

- RCRA Sites, Operable Unit 7, addresses 50 solid waste management units (SWMUs) that contain no radioactive contamination, may require a different technical approach than the Miscellaneous Sites Operable Unit areas, and for which a different remedial action schedule and approach (such as a RCRA closure) may be used. In addition, wastes other than soil or sediments may be present, such as sewage sludges or concrete.

- Inactive Underground Storage Tanks, Operable Unit 8, was added to the ER Program in April 1989 and addresses eight inactive underground storage tanks throughout Mound Plant.

1.2. INSTALLATION BACKGROUND

Mound Plant originated in 1943 as a technical organization to determine the chemical and metallurgical properties of polonium as part of the Manhattan Engineering District (DOE 1986). This work was conducted for the U.S. Army at several locations in the Dayton, Ohio, area. In 1946, 182 acres on the outskirts of the city of Miamisburg, Ohio, were purchased for the permanent Mound site (Figure 1.1). Work being conducted at the Dayton units was moved to this site in 1948.

Mound Plant is currently an integrated research, development, and production facility that operates in support of the DOE weapons and energy programs (DOE 1986). Mound Plant manufactures non-nuclear components and tritium-containing components for nuclear weapons. The plant also develops small heat sources for the space and defense programs.

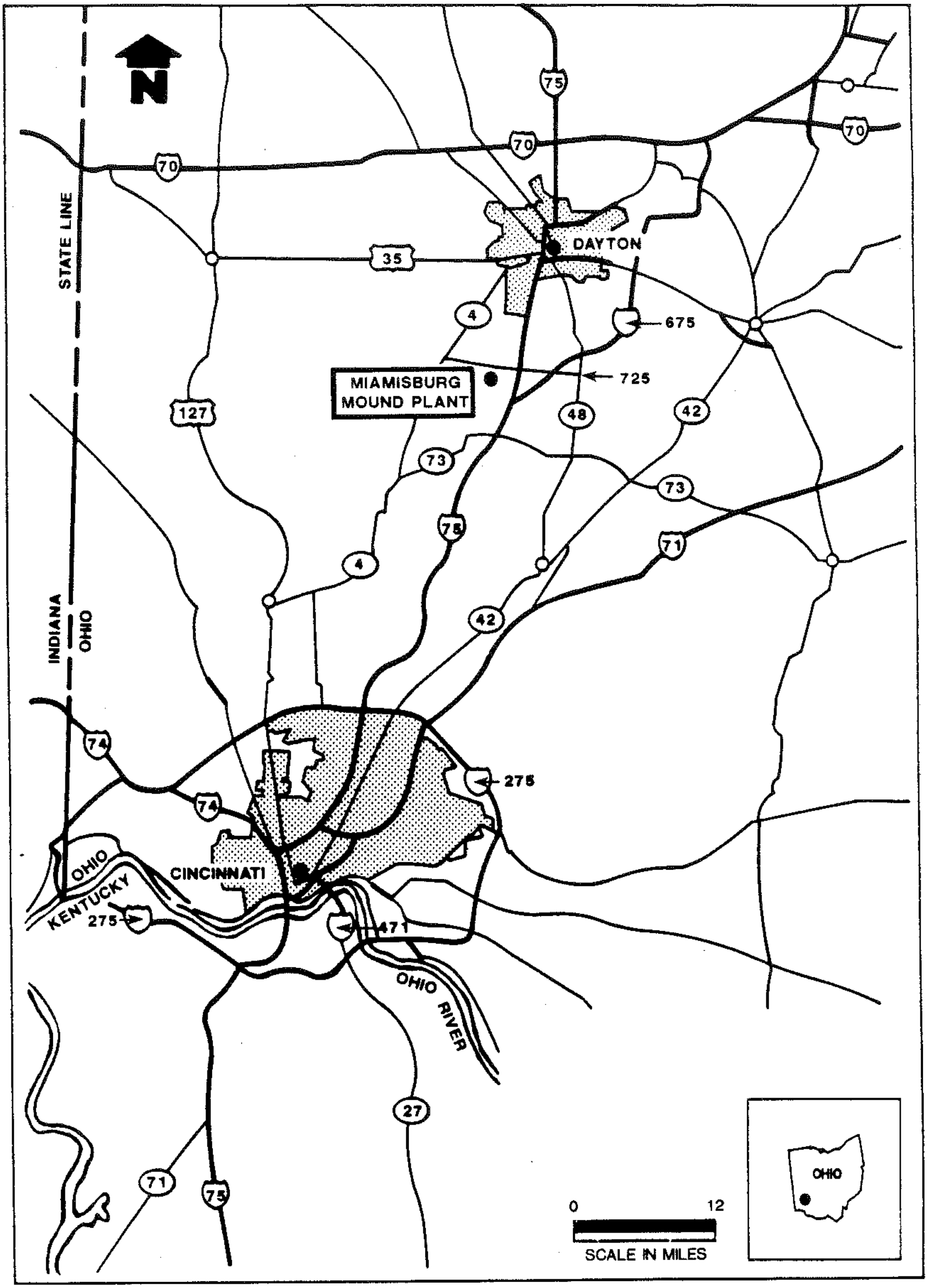

Figure 1.1. Location of Mound Plant.

1.3. REPORT ORGANIZATION

This plan is divided into sections that discuss the site histories, existing situations, data needs, and the field investigation plans for the 50 areas to be investigated under the RCRA Sites, Operable Unit 7.

- The site history section describes the location of the site and discusses the historical information that is available.

- The existing situation section discusses the results of previous investigations of the area, including known contaminants.

- The field investigation section discusses the organization and development of the field program, investigation methods, the drilling and borehole program, field measurements, and sampling activities for each of the areas to be investigated during this limited field investigation.

- Sections 1.7, 1.8, and Table I.4 summarize the RCRA Sites sampling activities.

- Appendix A provides the 1987 analytical results from sediment and water samples collected at the overflow pond, the asphalt-lined pond, and the retention basins.

A separate Health and Safety Plan and a Quality Assurance Project Plan have also been prepared for this limited field investigation. These are both tiered from and reference the Health and Safety Plan and Quality Assurance Project Plan in the Site-Wide Work Plan (DOE 1990).

1.4. OPERABLE UNIT DESCRIPTION

Guidance for CERCLA provides for limited field investigations during project scoping if available data are inadequate to develop a site conceptual model and adequately scope the project (EPA 1988). The majority of the potential release sites at Mound Plant have no documented history nor observation of contaminant releases; therefore, limited field investigations are required to identify the presence and types of contaminants, if any, and provide adequate data to plan the RI/FS and write the work plan.

The areas described in this limited field investigation work plan have been in operation since November 19, 1980, or will be in operation in the near future. These areas have been identified as possible SWMUs in the RCRA Facility Assessment (RFA) conducted by A. T. Kearney under contract with the EPA Region V (Kearney 1988).

1.4.1. Limited Field Investigation Objectives

The areas included in the RCRA Sites, Operable Unit 7, are potential release sites for which there are no known histories of releases; therefore, the objective of the limited field investigation is to identify the presence and type of contaminants, if any. The objectives of a limited field investigation are to develop a conceptual site model, enhance the scoping effort, and provide adequate data to write the work plan (EPA 1988).

1.4.1.1. Schedule of Limited Field Investigation

A schedule for the limited field investigation is presented in Figure 1.2.

The RCRA Sites, Operable Unit 7, limited field activities are planned for September 1990 through February 1991.

1.4.2. General Site Locations and Descriptions

This Work Plan presents the information required to conduct a limited field investigation for nonradioactive hazardous constituents at the 50 areas to be investigated as part of this operable unit (Figure 1.3).

Areas where some environmental samples have been collected as part of previous investigations include the

- sludge drying beds,
- asphalt-lined pond,
- Building 72 storage area,
- fire-fighting training facility,
- overflow pond, and
- retention basins.

- where is this data? what kind of samples were taken? Depths? who made this determination? what were samples analyzed for? what had been the history to include these sites?

Of the areas listed above, the limited field investigation will cover only the Building 72 storage area and the fire-fighting training facility because previous data have shown that the other areas are not contaminated.

1.4.3. Overview of Existing Situation

Comprehensive background information on the RI/FS at Mound Plant is presented in the RI/FS Site-Wide Work Plan (DOE 1990). The following section presents background information specific to the limited field investigation of the RCRA Sites, Operable Unit 7.

Soil gas and water samples have been collected and analyzed for hazardous contaminants from locations adjacent to some of the RCRA Sites Operable Unit areas. Soil samples have also been collected from several areas and analyzed quantitatively for hazardous constituents by Mound Plant and DOE. The results available from these investigations are summarized in the following sections.

```
Schedule Name : MOUND RCRA SITES BASELINE SCHEDULE
Responsible   : SANDY WAGNER, ER TSO
As-of Date    : 2-Oct-89     Schedule File : B:\ALMD-7

TASK ID # AL-MD-7 USING WESTON PERSONNEL COSTS
REVISED FEB 90 DR SMUIN
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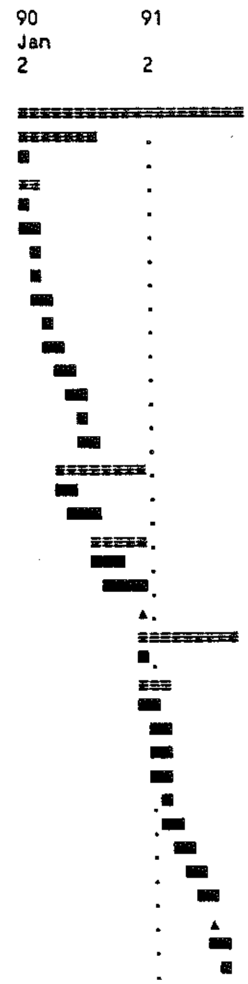
Task Name	Duratn (Days)	Start Date	End Date	Total $ (EAC)
AL-MD-7	426	8-Jan-90	16-Sep-91	675,760.90
RECONNAISSANCE SAMPLING PLAN	130	8-Jan-90	12-Jul-90	62,619.00
ESTIMATE SOW/COST	10	8-Jan-90	22-Jan-90	7,874.00
DEVELOP RECON PLAN	17	23-Jan-90	14-Feb-90	18,569.00
EVALUATE EXISTING DATA/NEEDS	5	23-Jan-90	29-Jan-90	6,480.00
DRAFT SAMPLING PLAN	5	30-Jan-90	5-Feb-90	8,880.00
SOP'S TO FOLLOW	1	6-Feb-90	6-Feb-90	864.00
WORD PROCESS/FINALIZE/DIST	6	7-Feb-90	14-Feb-90	2,345.00
INST/DOE AL/HQ REVIEW	22	15-Feb-90	19-Mar-90	0.00
INCORPORATE COMMENTS/MTG	10	20-Mar-90	2-Apr-90	15,888.00
PRODUCTION/REVIEW PROCESS/DIST	8	3-Apr-90	12-Apr-90	2,407.00
EPA REVIEW	22	13-Apr-90	14-May-90	0.00
INCORPORATE COMMENTS/MTG	23	15-May-90	15-Jun-90	15,408.00
PRODUCTION/REVIEW PROCESS/DIST	8	18-Jun-90	27-Jun-90	2,473.00
EPA APPROVAL TO PROCEED	10	28-Jun-90	12-Jul-90	0.00
LIMITED FIELD INVESTIGATION	156	1-May-90	12-Dec-90	468,656.90
EST SOW/COST - RI/FS FIELD WRK	11	1-May-90	15-May-90	8,504.00
SELECT RI/FS SUBCONTRACTORS	40	16-May-90	12-Jul-90	12,672.00
GATHER RI/FS DATA	105	13-Jul-90	12-Dec-90	447,480.90
PRIME CONT. FIELD WORK	60	13-Jul-90	5-Oct-90	331,732.00
CONDUCT SAMPLE ANALYSIS	85	10-Aug-90	12-Dec-90	115,748.90
RI/FS FIELD WORK DONE	0	13-Dec-90	13-Dec-90	0.00
SCOPING REPORT	187	29-Nov-90	26-Aug-91	144,485.00
ESTIMATE SOW & COST FOR REPORT	10	29-Nov-90	12-Dec-90	9,800.00
DEVELOP DRAFT REPORT	45	13-Dec-90	19-Feb-91	87,648.00
EVALUATE RI/FS DATA	20	13-Dec-90	11-Jan-91	51,840.00
DRAFT AREA DESCRIP & CHARACTER	20	14-Jan-91	11-Feb-91	8,880.00
NATURE & EXTENT OF CONTAM	15	14-Jan-91	4-Feb-91	8,640.00
CONTAMINANT FATE & TRANSPORT	15	14-Jan-91	4-Feb-91	12,240.00
CONCLUSIONS & NEED FOR ADD. RI	10	5-Feb-91	19-Feb-91	6,048.00
PRODUCTION/REVIEW PROCESS	16	20-Feb-91	13-Mar-91	7,834.00
TSO/INST/DOE AL/HQ REVIEW	22	14-Mar-91	12-Apr-91	0.00
INCORPORATE COMMENTS	15	15-Apr-91	3-May-91	16,560.00
PRODUCTION/REVIEW PROCESS	16	6-May-91	28-May-91	3,610.00
DELIVERABLE TO EPA/OEPA	0	29-May-91	29-May-91	0.00
OEPA/EPA REVIEW	22	29-May-91	27-Jun-91	0.00
INCORPORATE OEPA/EPA COMMENTS	15	28-Jun-91	19-Jul-91	12,000.00

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Detail Task        Summary Task        Milestone
(Started)          (Started)           Conflict
(Slack)            (Slack)             Resource delay
----------------- Scale: 1 month per character ----------------

TIME LINE Gantt Chart Report, Strip 1, Page 1
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Figure 1.2. Mound Plant RCRA Sites baseline schedule, revised January 1990 (1 of 2).

Schedule Name : MOUND RCRA SITES BASELINE SCHEDULE
Responsible : SANDY WAGNER, ER TSO
As-of Date : 2-Oct-89 Schedule File : B:\ALMD-7

TASK ID # AL-MD-7 USING WESTON PERSONNEL COSTS
REVISED FEB 90 DR SMUIN

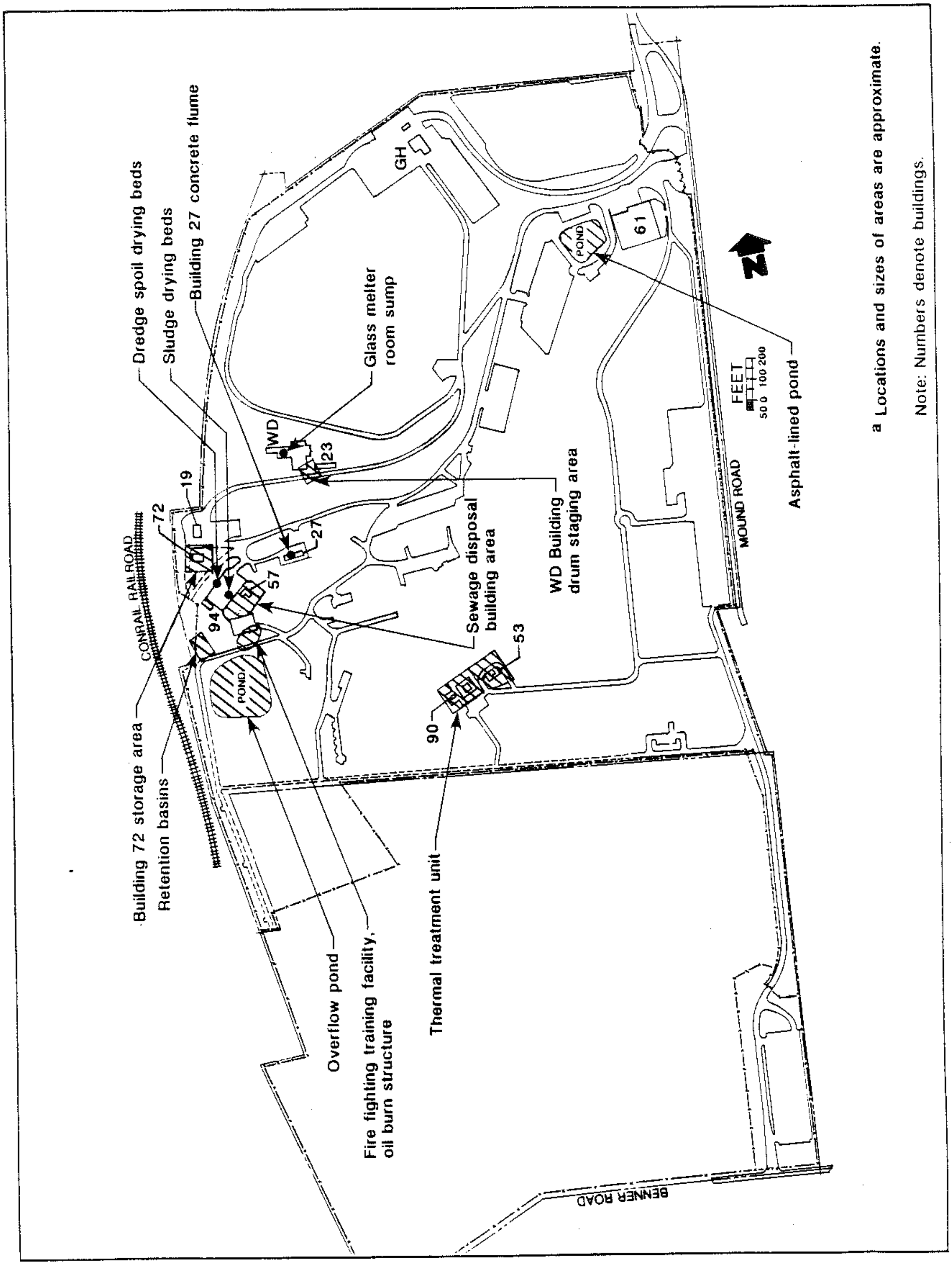
Task Name	Duratn (Days)	Start Date	End Date	Total $ (EAC)	90 Jan 2	91 2
PRODUCTION/REVIEW PROCESS	16	22-Jul-91	12-Aug-91	3,577.00		.
OEPA/EPA APPROVAL/PUBLIC REL	10	13-Aug-91	26-Aug-91	3,456.00		.
RELEASE REPORT	0	27-Aug-91	27-Aug-91	0.00		.
COMPLETION	0	17-Sep-91	17-Sep-91	0.00		.

Detail Task — (Started) — (Slack)
Summary Task — (Started) — (Slack)
▲ Milestone — ▸▸▸ Conflict — Resource delay

Scale: 1 month per character

TIME LINE Gantt Chart Report, Strip 1, Page 2

Figure 1.2. Mound Plant RCRA Sites baseline schedule, revised January 1990 (2 of 2).



[a] Locations and sizes of areas are approximate.

Note: Numbers denote buildings.

Figure 1.3. RCRA Sites, Operable Unit 7[a] (1 of 2).

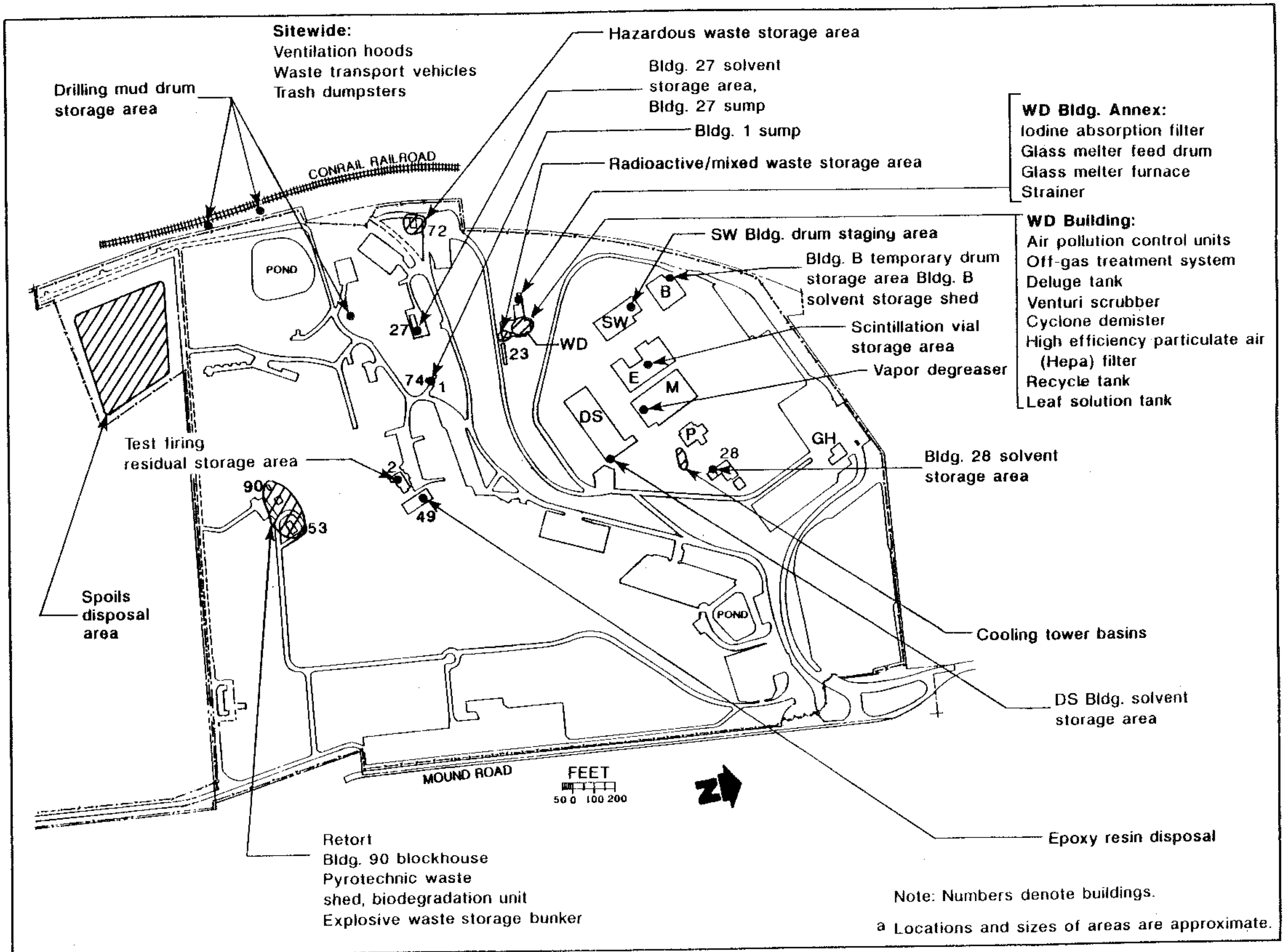


Figure 1.3. RCRA Sites, Operable Unit 7.[a] (2 of 2)

1.4.3.1. Soil Gas Survey

A soil gas survey was performed in 1987 in the area shown in Figure 1.4 as part of the Mound Plant Area B and Seeps, Stage 1, remedial investigation (DOE 1989a). The survey included several sampling locations in or near the Building 27 concrete flume, fire-fighting training facility, WD Building drum staging area, and overflow pond (Figure 1.5).

The soil gas samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, benzene, ethylbenzene, and toluene (the methodology for sample analyses is presented in DOE 1989a). These results are given in Table I.1. A source for the contaminants near the overflow pond is suspected and is under investigation as part of the Area B remedial investigation (DOE 1989a). It should be noted that soil gas measurements do not provide quantitative measurements of contaminants in soil; however, soil gas can provide qualitative information on the groups of contaminants that may be present and their relative distribution.

1.4.3.2. Water Sample Analytical Results

The existing groundwater monitoring network at Mound Plant includes several production and monitoring wells that are located near the RCRA Sites Operable Unit areas (Table I.2 and Figure 1.6). Monitoring data from these locations indicate possible groundwater contamination at the RCRA sites. These wells were sampled on a quarterly basis from December 1987 to September 1988.

Several contaminants have been reported at elevated concentrations in water samples from the monitoring wells associated with the RCRA Sites Operable Unit areas (Table I.2). The applicable maximum contaminant level (MCL), maximum contaminant level goal (MCLG), or secondary drinking water standard (SMCL) for these contaminants are also presented. The compounds that exceed the MCLs, MCLGs, or SMCLs are noted.

A more extensive discussion of water quality is provided in the Area B and Seeps Operable Units, Stage 3, Remedial Investigation Plan, which includes an investigation of volatile organic compounds (VOCs) in the groundwater throughout the Mound Plant and its environs (DOE 1989a).

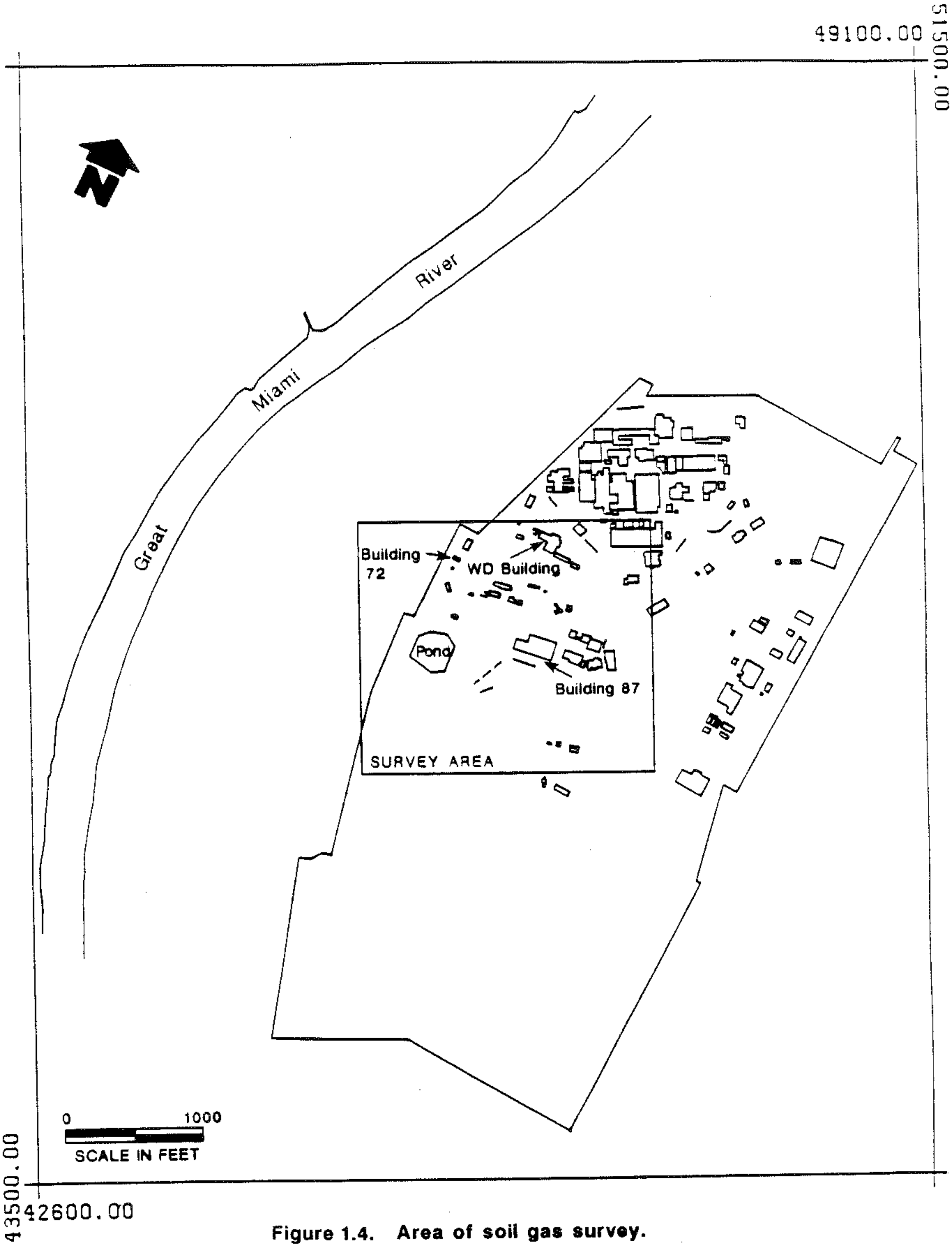


Figure 1.4. Area of soil gas survey.

Table I.1. Soil Gas Results

Chemical [a]	Concentration (µg/L)	Location[b]
trichloroethene	25.50	17
	24.40	18
	77.78	19
	0.01	56
	0.44	58
1,2-*trans*-dichloroethene	33.00	17
	10.93	18
	5.02	19
	0.01	38
chloroethene	48.00	17
	20.02	18
	0.12	19
	0.23	20
benzene	11.10	17
	0.80	18
	12.20	19
	0.63	20
	1.74	21
	1.16	22
	0.05	24
	1.96	25
	0.21	28
	0.07	31
	0.06	36
	0.11	37
	0.04	38
	0.13	56
	0.18	58
toluene	0.96	17
	0.02	18
	1.30	19
	0.11	20
	0.16	22
	0.59	25
	0.63	28
	0.24	30
	0.14	31
	0.02	36
	0.03	37
	0.02	38
	0.01	56
	0.06	58
ethylbenzene	0.76	17
	0.60	18
	0.18	21
	0.56	25
	0.34	28

- what was analyzed for?
- are the ones not listed non-detect?
- why were these the constituents of concern?
- is this a pipeline?

[a]Methodology for sample analysis in DOE 1989a.
[b]Numbered location shown in Figure 1.5.

Table I.2. Compounds Detected in Monitoring Wells and Seeps Associated with the RCRA Sites, Operable Unit 7, Areas

Area	Well	Compound	Concentration	MCL	MCLG	Date
Sewage Disposal Building area, sludge drying beds, dredge spoil drying beds, Retention basins, and Building 72 storage area	0137	1,2-dichloroethane	11 μg/L[a]	5 μg/L	0	03/13/86
		1,2-*trans*-dichloroethene	16 μg/L	70 μg/L[b]	NE	03/13/86
		1,2-*trans*-dichloroethene	13 μg/L	70 μg/L[b]	NE	05/27/86
		styrene	6 μg/L[a]	5 μg/L[b]	NE	03/07/88
WD Building drum staging area	0227	nitrate	30.5 mg/L[a]	10 mg/L	NE	12/13/87
	0137	1,2-dichloroethane	11 μg/L[a]	5 μg/L	0	03/13/86
		1,2-*trans*-dichloroethene	16 μg/L	70 μg/L[b]	NE	03/13/86
		1,2-*trans*-dichloroethene	13 μg/L	70 μg/L[b]	NE	05/27/86
		styrene	6 μg/L[a]	5 μg/L[b]	NE	03/07/88
Oil burn structure, Fire fighting training facility	0046	lead	100 μg/L[a]	50 μg/L	NE	02/11/86
		1,2-*trans*-dichloroethene	13 μg/L	70 μg/L[b]	NE	02/11/86
		chloroform	2 μg/L	100 μg/L	NE	02/11/86
		tetrachloroethene	8 μg/L[a]	5 μg/L[b]	NE	02/11/86
		trichloroethene	14 μg/L[a]	5 μg/L	0	02/11/86
		pentachlorophenol	47 μg/L	200 μg/L[b]	NE	02/11/86
		1,2-*trans*-dichloroethene	14 μg/L	70 μg/L[b]	NE	04/29/86
		tetrachloroethene	5 μg/L[a]	5 μg/L[b]	NE	04/29/86
		tetrachloroethene	7 μg/L[a]	5 μg/L[b]	NE	03/08/88
		trichloroethene	10 μg/L[a]	5 μg/L	0	03/08/88
		1,2-*trans*-dichloroethene	5 μg/L	70 μg/L[b]	NE	06/24/88
Asphalt-lined pond	0111	total xylenes	6 μg/L	10,000 μg/L[b]	NE	06/23/88
Overflow pond	0055	1,2-*trans*-dichloroethene	112 μg/L[a]	70 μg/L[b]	NE	02/11/86
		chloroform	8 μg/L	100 μg/L	NE	02/11/86
		ethylbenzene	70 μg/L	700 μg/L[b]	NE	02/11/86
		tetrachloroethene	9 μg/L[a]	5 μg/L[b]	NE	02/11/86
		trichloroethene	32 μg/L[a]	5 μg/L	0	02/11/86
		vinyl chloride	17 μg/L[a]	2 μg/L	0	02/11/86
		1,2-*trans*-dichloroethene	115 μg/L[a]	70 μg/L[b]	NE	04/29/86

Table I.2. (continued)

Area	Well	Compound	Concentration	MCL	MCLG	Date
Overflow pond (cont.)	0055 (cont.)	chloroform	7 µg/L	100 µg/L	NE	04/29/86
		ethylbenzene	152 µg/L	700 µg/L[b]	NE	04/29/86
		tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	04/29/86
		trichloroethene	32 µg/L[a]	5 µg/L	0	04/29/86
		vinyl chloride	22 µg/L[a]	2 µg/L	0	04/29/86
		1,2-*trans*-dichloroethene	90 µg/L[a]	70 µg/L[b]	NE	05/27/86
		chloroform	4 µg/L	100 µg/L	NE	05/27/86
		ethylbenzene	174 µg/L	700 µg/L[b]	NE	05/27/86
		trichloroethene	20 µg/L[a]	5 µg/L	0	05/27/86
		vinyl chloride	24 µg/L[a]	2 µg/L	0	05/27/86
		1,2-*trans*-dichloroethene	47 µg/L	70 µg/L[b]	NE	02/27/87
		ethylbenzene	100 µg/L	700 µg/L[b]	NE	02/27/87
		vinyl chloride	55 µg/L[a]	2 µg/L	0	02/27/87
		1,2-trans-dichloroethene	49 µg/L	70 µg/L[b]	NE	03/08/88
		tetrachloroethene	6 µg/L[a]	5 µg/L[b]	NE	03/08/88
		trichloroethene	20 µg/L[a]	5 µg/L	0	03/08/88
	0046	lead	100 µg/L[a]	50 µg/L	NE	02/11/86
		1,2-*trans*-dichloroethene	13 µg/L	70 µg/L[b]	NE	02/11/86
		chloroform	2 µg/L	100 µg/L	NE	02/11/86
		tetrachloroethene	8 µg/L[a]	5 µg/L[b]	NE	02/11/86
		trichloroethene	14 µg/L[a]	5 µg/L	0	02/11/86
		pentachlorophenol	47 µg/L	200 µg/L[b]	NE	02/11/86
		1,2-*trans*-dichloroethene	14 µg/L	70 µg/L[b]	NE	04/29/86
		tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	04/28/86
		tetrachloroethene	7 µg/L[a]	5 µg/L[b]	NE	03/08/88
		trichloroethene	10 µg/L[a]	5 µg/L	0	03/08/88
		1,2-*trans*-dichloroethene	5 µg/L	70 µg/L[b]	NE	06/24/88
	0152	tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	12/14/87
		total xylenes	7 µg/L	10,000 µg/L[b]	NE	12/14/87
		trichloroethene	13 µg/L[a]	5 µg/L	0	12/14/87
		total xylenes	13 µg/L	10,000 µg/L[b]	NE	12/14/87
		trichloroethene	13 µg/L[a]	5 µg/L	0	12/14/87
		trichloroethene	12 µg/L[a]	5 µg/L	0	03/07/88
		tetrachloroethene	8 µg/L[a]	5 µg/L[b]	NE	06/23/88
		trichloroethene	13 µg/L[a]	5 µg/L	0	06/23/88
		trichloroethene	9 µg/L[a]	5 µg/L	0	09/12/88

Table I.2. (continued)

Area	Well	Compound	Concentration	MCL	MCLG	Date
	0153	1,1-dichloroethane	2.2 µg/L	NE	NE	09/13/88
		1,2-*trans*-dichloro-ethene	1.9 µg/L	70 µg/L[b]	NE	09/13/88
		1,3-trans-dichloro-propene	2.3 µg/L	NE	NE	09/13/88
		bromodichloro-methane	2.1 µg/L	100 µg/L	NE	09/13/88
		bromoform	5.3 µg/L	100 µg/L	NE	09/13/88
		tetrachloroethene	1.7 µg/L	5 µg/L[b]	NE	09/13/88
		trichlorofluoro-methane	3.1 g/L	NE	NE	09/13/88
Glass melter room sump	0227	nitrate	30.5 mg/L[a]	10 mg/L	NE	12/13/87

[a]Measured concentration equals or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
[b]Proposed MCL or MCLG (SDWA 1988)
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

where are the results for the remaining wells?

0122
0111
0063
0155
0154
0071
0271
0076

Any soil samples?

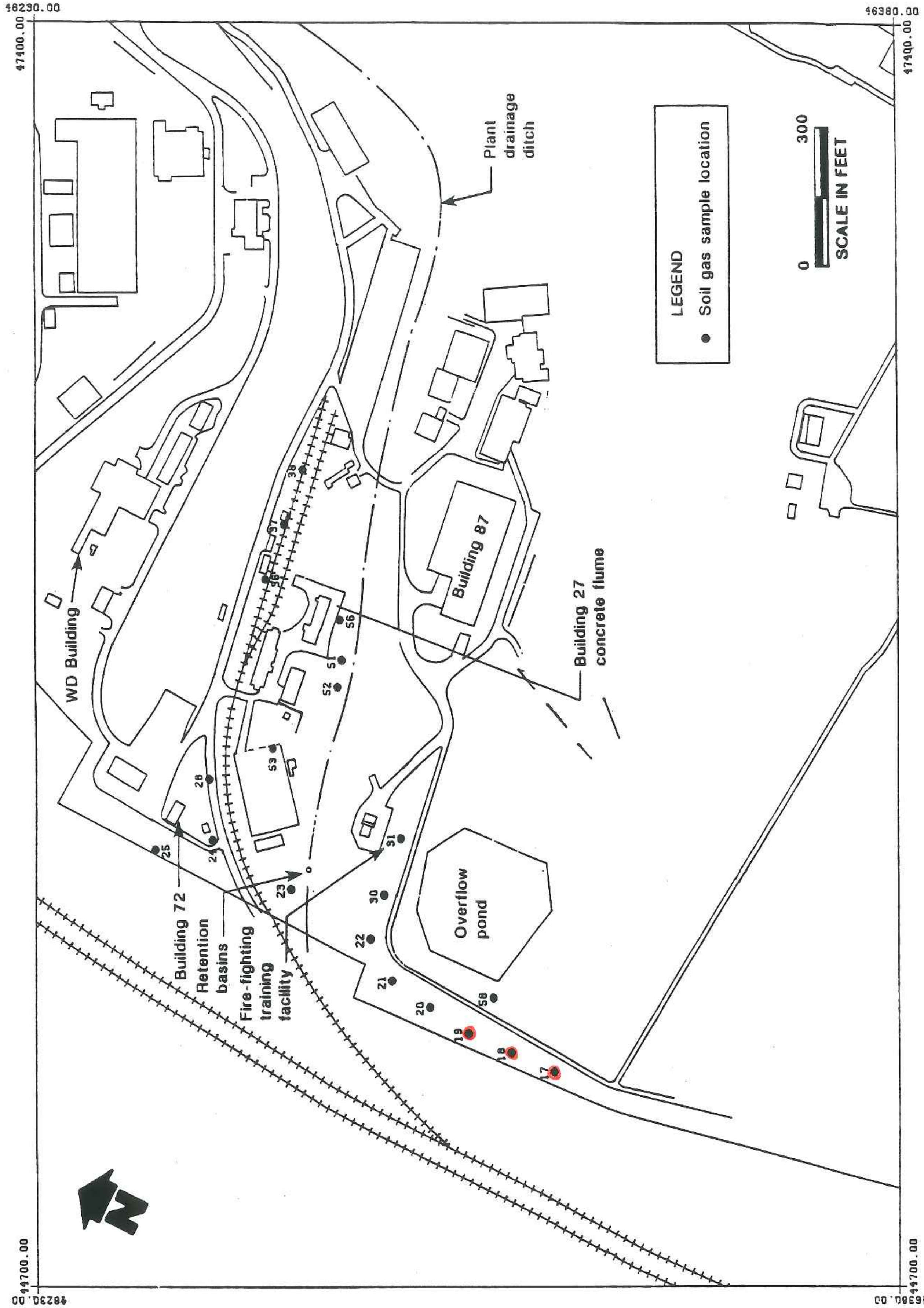


Figure 1.5. Numbered sample collection locations of soil gas survey.

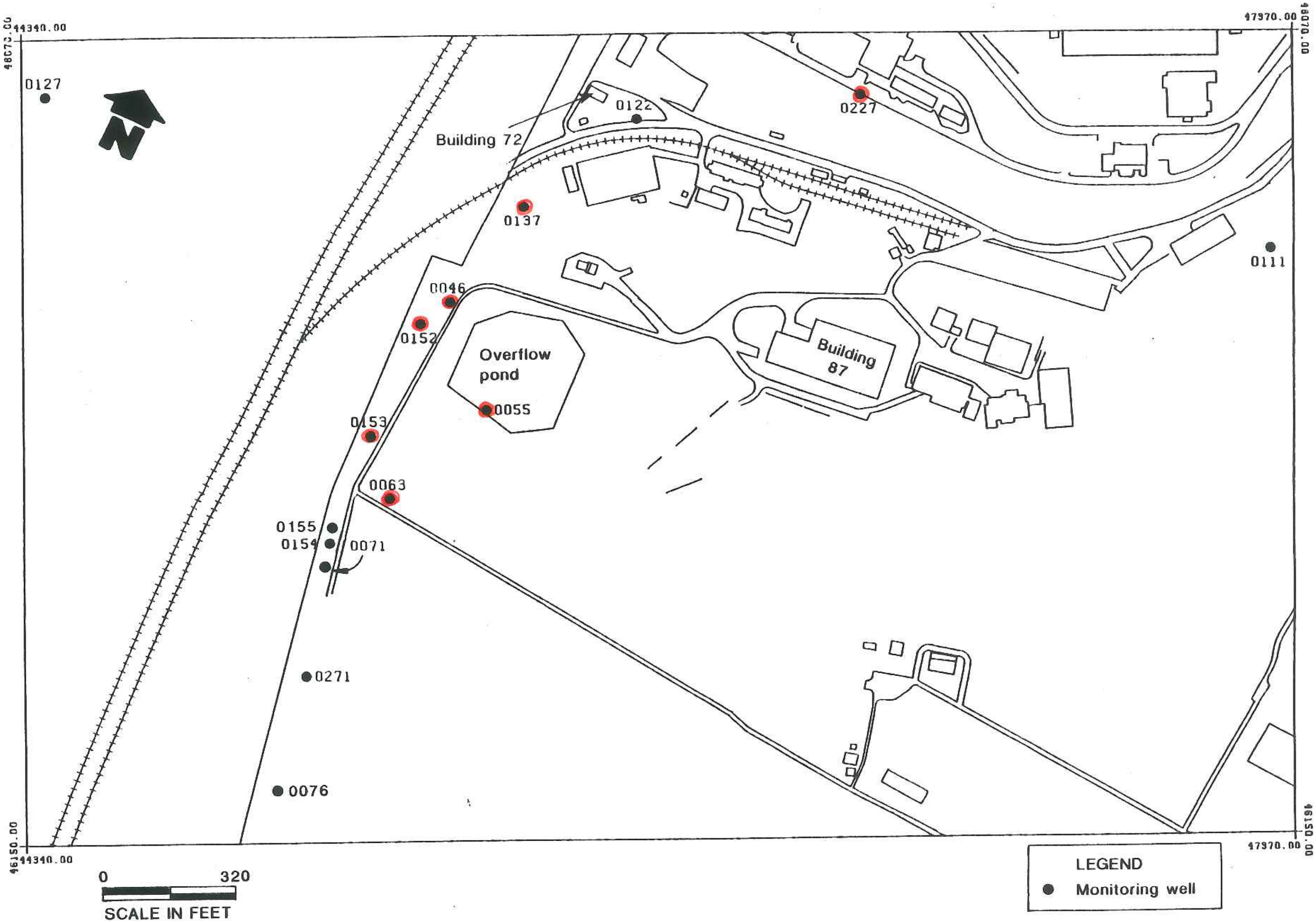


Figure 1.6. Groundwater monitoring locations.

1.5. GEOLOGY

1.5.1. Regional Geology

The Mound Plant is located within the Central Stable Province on the eastern portion of the Indiana-Ohio Platform. The latter is bounded by the Illinois basin to the west, the Michigan Basin to the north, the Appalachian basin to the east, and the Kentucky fault zone to the south.

Mound Plant is on a currently stable geological platform. The attitude of the beds underlying the site is nearly horizontal, sloping about 5 ft per mile to the northwest. The geological record preserved in these rocks indicates tectonic stability during Paleozoic deposition and later regional uplift, exposing the rocks to erosion.

Precambrian crystalline basement rock in the vicinity of the site is covered by about 3,400 ft of Cambrian and Ordovician sediments, comprised of marine shales and limestones. The upper surface of the Ordovician rocks was eroded by glaciation, the most recent stage being the Wisconsin.

The bedrock unit in the Miamisburg area is the Richmond Formation of Ordovician age (Stout, ver Steeg, and Lamb 1943). These deposits consist of interbedded layers of flat-lying calcareous shale layers and thin layers of siliceous limestone. The shales, brown to gray in color, vary in thickness from 1 to 8 ft, while the dense limestone layers, bluish-gray in color, have an average thickness of only 2 to 4 inches. The limestone, however, constitutes between 20 and 50 percent of the formation. Typically, the upper 10 to 20 ft of the shale/limestone sequence has been weathered resulting in a brown clayey consistency which is difficult to differentiate from the glacial till. Above these are deposits of Pleistocene glacial till and outwash of variable thickness and extent.

The topographically lower Great Miami River Valley is filled with glacial outwash deposits and fluvial sediments overlying bedrock. Composed of gravels, sands, silts, and clays, these deposits increase in thickness from the western margin of Mound Plant toward the Great Miami River, and comprise the Buried Valley aquifer, a major source of groundwater locally (DOE 1989). Two distinct layers of sand and gravel, separated by glacial till, have been identified in geological logs from offsite monitoring wells. The maximum total thickness of these deposits is 142 ft.

RCRA Sites are located in both the Buried Valley aquifer and the bedrock. The thermal treatment unit, the glass melter room sump, the WD Building drum staging area, and the asphalt-lined pond are located in the thin veneer of fill material covering the bedrock; the rest are in the glacial deposits.

1.5.2. Site Geology

The geology of Mound Plant was evaluated during a site-safety assessment (Dames and Moore 1973). A comprehensive review of this work, and subsequent work completed to support the geotechnical and hydrogeological investigations, is contained within the RI/FS Site-Wide Work Plan for the Mound Plant Site (DOE 1990). A brief summary follows.

On the Mound site, tongues of the glacial and alluvial deposits extend eastward from the Great Miami River valley into the smaller tributary valley between the Main Hill and the SM/PP Hill. The onsite deposits are less than 75 ft thick and contain only the upper sand and gravel unit and the till lense. Interbedded in the sand and gravel are discontinuous lenses of silty sand and gravel. The glacial deposits are Pleistocene in age and unconformably overlie the shale/limestone bedrock. Figure 1.7 shows the extent of the Buried Valley aquifer. The extension of the Buried Valley aquifer's contiguous deposits onto the site is important because it provides a preferential pathway for contaminant migration from the site to the regional aquifer.

The two hills on the Mound Plant site (Figure 1.8) are shale-/limestone-covered with a thin veneer (1 to 10 ft) of glacial till and engineered fill consisting of silt, sand, clay, and gravel. Fractures are ubiquitous in the limestone beds and occur at either high angles to bedding (vertical or subvertical) or along bedding planes. The shale layers are variably weathered and fractured with layers of relatively impermeable, unweathered shale and limestone separated by more permeable weathered layers. The denser layers impede the vertical movement of groundwater, forcing lateral movement along fractures in both the limestone and shale. Orange to brown discoloration, suggestive of groundwater movement, is commonly present along fractures in the limestone, along bedding planes, and at the contact between the shale and limestone beds. At three horizons, however, a relatively thick accumulation of shale (5 to 8 ft thick) is encountered. The lower two layers form spring lines by deflecting groundwater movement laterally until it discharges at the land surface. The areal extent of these layers is not known.

1.6. SITE HYDROGEOLOGY

1.6.1. Groundwater Systems

Two groundwater systems are of concern at Mound Plant. The first is the regional system consisting of the glacial deposits of the Buried Valley aquifer along the Great Miami River and the adjacent tributary valleys; the second is the indurated bedrock system located on the Main Hill and the SM/PP Hill.

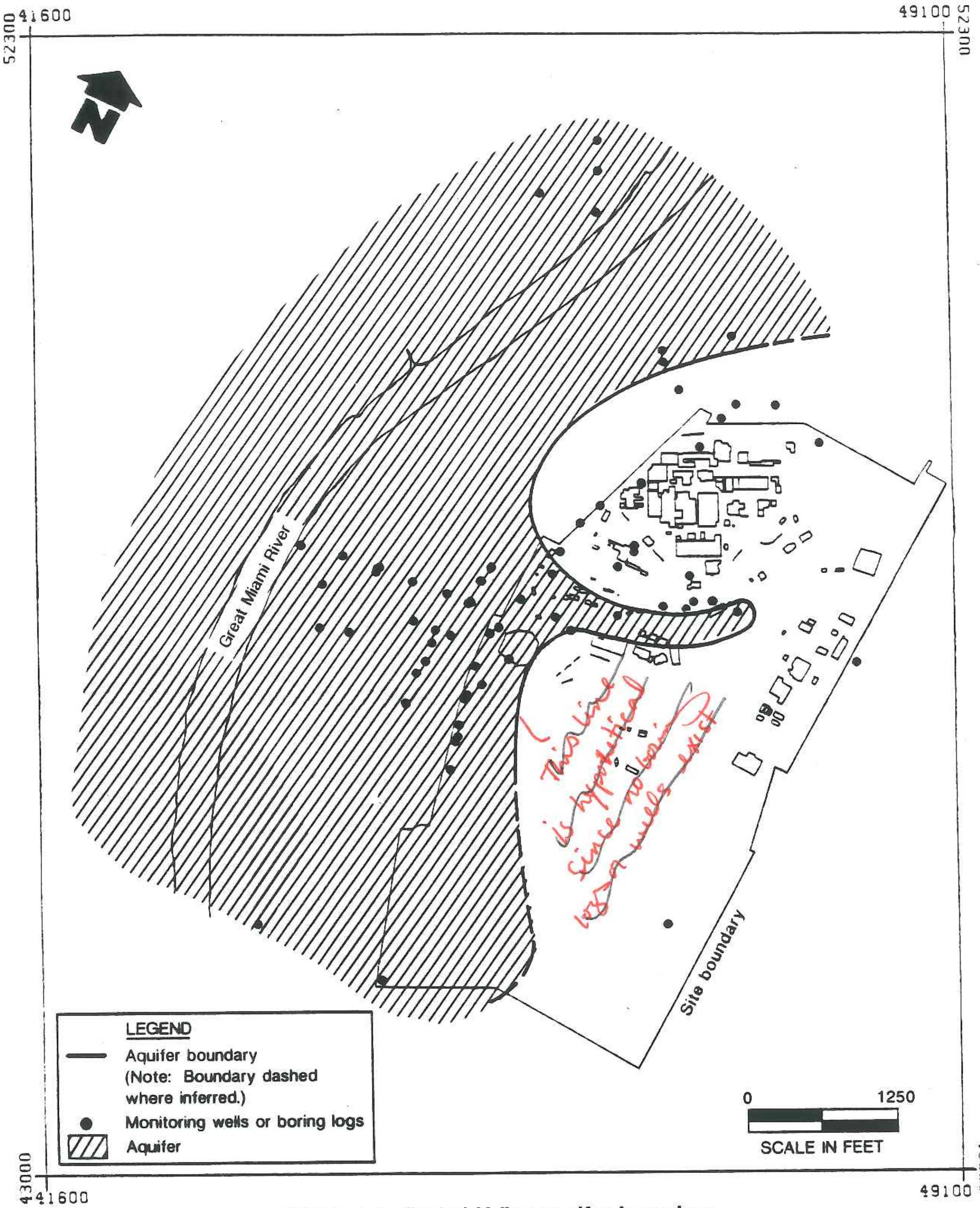


Figure 1.7. Buried Valley aquifer boundary.

Figure 1.8. Topography of the Mound Plant area.

Buried Valley Aquifer

The Buried Valley aquifer, in many locations along the Great Miami River and adjacent to the Mound Plant site, has two water bearing zones which are hydraulically connected across the less permeable till. The upper unit is under water table conditions, while the lower is confined or semi-confined depending upon the extent of the till layer. The areal extent of the glacial till is important because it may act as an aquitard and limit the potential downward movement of contaminants, if they exist, from the upper unit to the lower unit.

Geologic logs from on-site wells indicate that the lower sand and gravel layer may not be present in the tributary valley on the Mound site. The onsite deposits, which contain more silt and clay sized material, have a maximum thickness of 50 ft and are hydraulically connected with the regional aquifer. Groundwater within the unconsolidated sediments of the Buried Valley system flows toward the plant drainage ditch (Figure 1.9) mixing with water infiltrating from this line source. This mixed water then migrates west into the main part of the Buried Valley aquifer (DOE 1989).

Transmissivities for the glacial and fluvial deposits are generally between 60,000 and 200,000 gallons per day per foot with storage coefficients ranging from 0.02 (Dames and Moore 1976a,b). Where the aquifer is confined by extensive clay layers, the storage coefficient may be as low as 0.0002 (Spieker 1968). The range in hydraulic properties is caused by the variable thickness of the deposits and the amount of relatively impermeable glacial till present in any location.

Wells developed in the upper zone of the Buried Valley aquifer yield less than 500 gpm while those completed in the lower unit yield as much as 2000 gpm (Spieker 1968).

Regional flow in the Buried Valley aquifer is down-valley to the south (Figure 1.10). Based on previous aquifer tests, a local capture zone has been calculated for a hypothetical situation when the Mound Plant production wells are pumping. This capture zone would limit the migration of hazardous constituents offsite because the cone of depression around the production wells would draw the contaminants toward the depression instead of allowing the migration that would normally occur if the wells were not being used.

Slug and aquifer test results are available for both the Buried Valley aquifer and contiguous deposits. A more detailed description of these tests and the hydrogeology at Mound Plant is presented in the Area B and Seeps Remedial Investigation Plan (DOE 1989a).

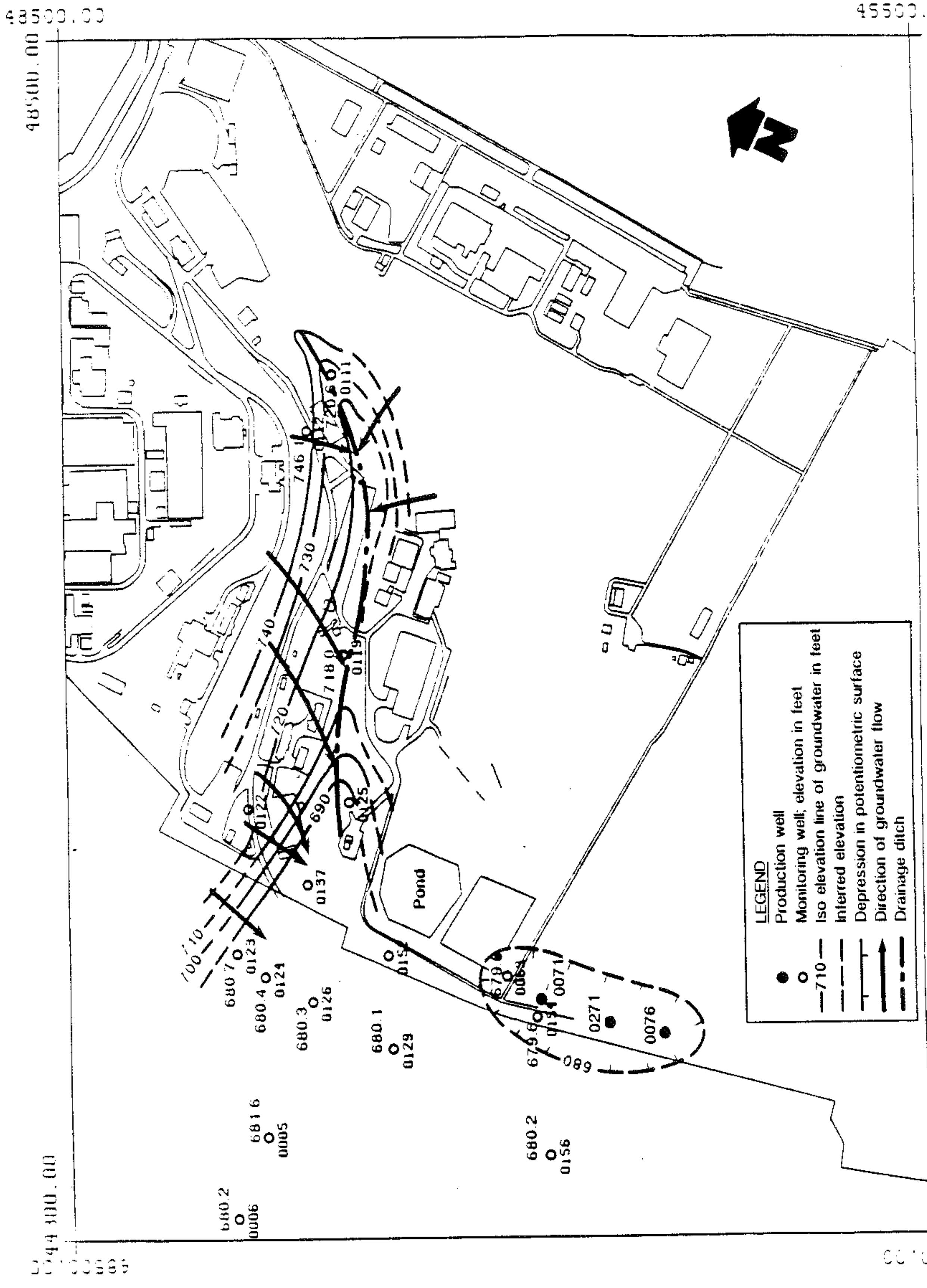


Figure 1.9. Elevation of groundwater and direction of flow on February 29, 1988, for the contiguous deposits of the Buried Valley aquifer.

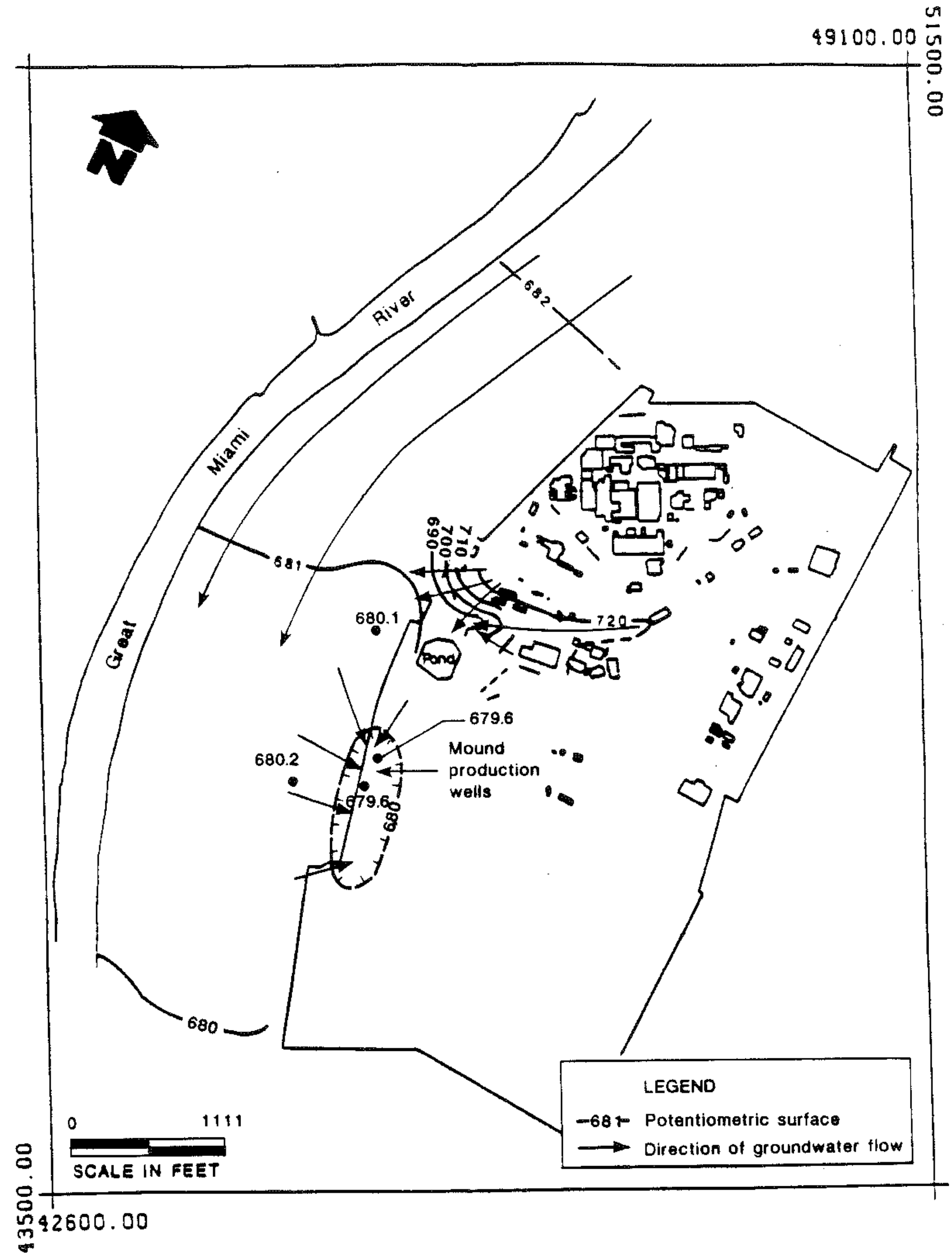


Figure 1.10. Elevation and direction of regional groundwater flow in the Buried Valley aquifer and adjacent tributary valley on February 29, 1988.

Bedrock Aquifer

Groundwater within the bedrock is perched on relatively impermeable, unweathered shale beds and is forced to move along fractures and bedding planes. A series of small seeps are the discharge points for water within the bedrock on the Main Hill. The seeps are of concern because they contain tritium that has been traced to soil beneath the SW Building. The locations of the seeps relative to the SW Building indicate that a complex flow system must exist, and additional data from other sources is still required for an adequate determination of the extent of contamination. Groundwater flow within the bedrock system is controlled not only by the complex flow paths of the fracture systems but also by the timing and location of recharge. Water is recharged to the system both areally, from infiltration of precipitation and sprinkler irrigation; and as leakage from water transmission pipes and sewers. The bedrock aquifer is not a regional system; flow patterns within each of the two hills appear to be separate and unique.

Wells completed in the shale bedrock generally yield less than 5 gpm with specific capacities of 0.25 to 2.50 gpm/ft of drawdown (Dames and Moore 1976a,b). For site specific data, twelve test pits were excavated on the Mound site between October 1986 and March 1987. Flow into the pits from the bedrock occurred along the shale surface and in fractures. Flow was not measured in all pits. Where flow occurred, however, the total flow ranged from 54 gallons per day (0.037 gpm) to 1,400 gallons per day (0.97 gpm).

1.6.2. Groundwater Quality

Groundwater sampling and analyses were accomplished during the routine Mound Plant environmental surveillance and the ongoing Area B and Seeps remedial investigation (DOE 1989a). Water sampling for the remedial investigation was performed in March 1987 for existing monitoring wells and in December 1987 and March, June, and September of 1988 for the monitoring wells installed during Stage 2. In December 1988, samples were collected from seeps and tritium monitoring stations on the Main Hill at Mound Plant for analysis for hazardous constituents. Water quality analyses have encompassed the suspected contaminants, including several radionuclides, and general indicator parameters. The only radionuclide present at Mound Plant that shows considerable mobility in the environment is tritium. As an isotope of hydrogen (hydrogen-3), tritium exchanges readily with a hydrogen atom in water to form tritiated water (NCRP 1979). Therefore, it moves through the hydrologic system as water.

1.6.2.1. Perched Bedrock System

Groundwater sampling and analysis were completed during the routine Mound Plant environmental surveillance and the ongoing Area B and Seeps remedial investigation (DOE 1989a). The location of the seeps is shown in Figure 1.11. Geochemical characteristics, including the differences in the stable isotope

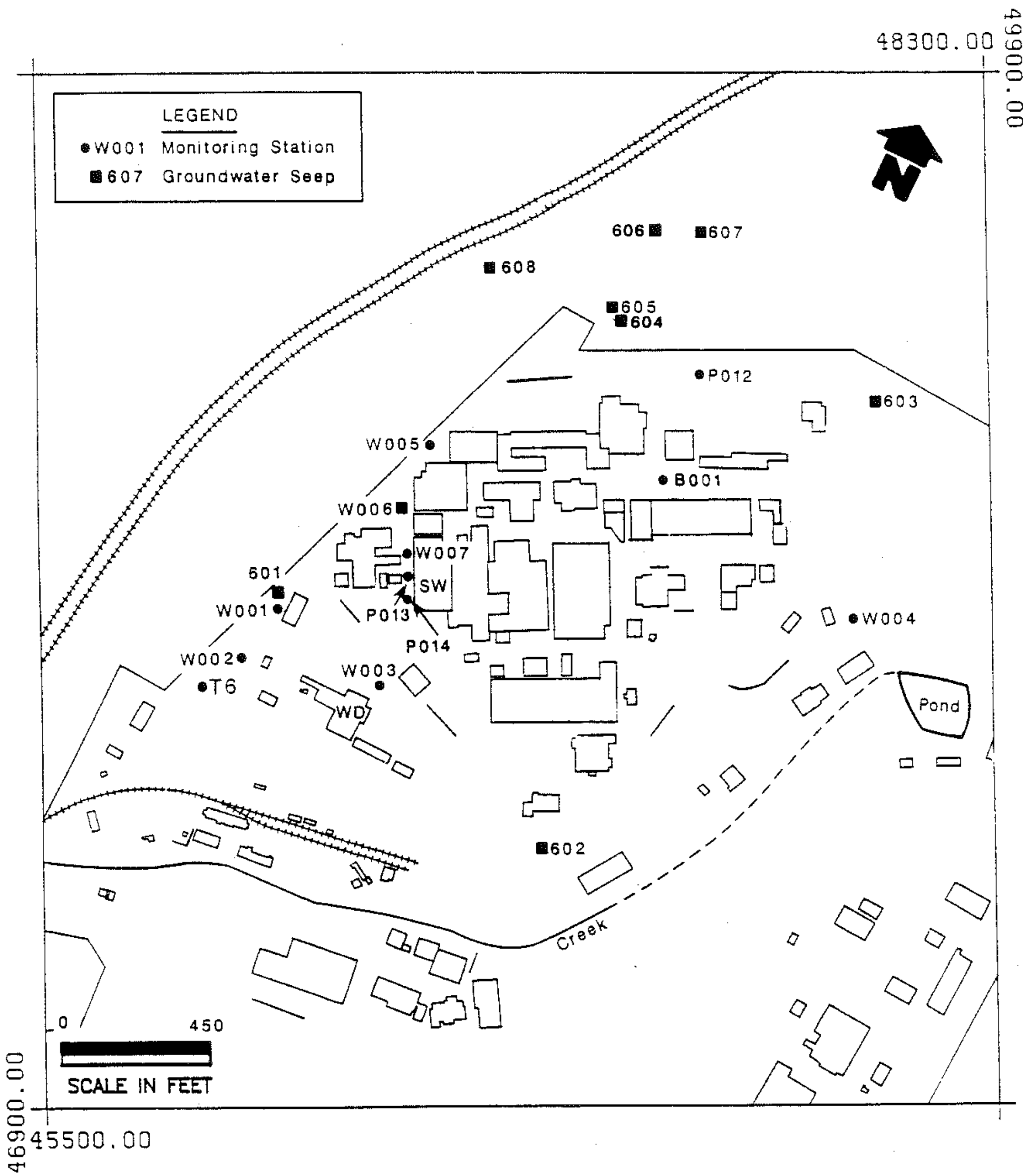


Figure 1.11. Groundwater seeps and tritium groundwater assessment monitoring stations.

content, the inorganic chemistry, and the distribution of indicator parameters (temperature, specific conductance, and pH) of the seeps, indicate that water movement in the fractured bedrock is a complicated process. Differences in recharge rates and sources, rock/water interactions, differential mixing and contaminant source locations all influence the chemical make-up of the discharge water. Figures 1.12 through 1.17 show the variation in seep water quality with time and location on the site. To date, the individual sources of water have not been identified other than to determine that different sources exist and are acting as recharge. Therefore, water sampling must occur close to the potential contaminant sources or the provenance of the contamination will not be identifiable.

The perched bedrock aquifer has low specific conductance, indicating good general water quality. VOCs, including trichloroethene, tetrachloroethene, and nitrates, were detected at the Main Hill seeps and wells. The water quality data for these wells and seeps are discussed in detail in the Area B and Main Hill Seeps Remedial Investigation Plan (DOE 1989a). Tritium is below the offsite discharge standard of 20 nCi/L (40 CFR 141) at all Main Hill seeps.

1.6.2.2. Buried Valley Aquifer and Contiguous Deposits

Samples collected from the older monitoring wells and new monitoring wells installed during the Area B and Main Hill Seeps, Stage 2, remedial investigation were analyzed for common ions to distinguish the differences in geochemistry and to fingerprint possible sources of recharge to the groundwater. There were only slight differences in the geochemistry of water samples across the site. Figures 1.16 and 1.17 show the results from water quality samples taken in December 1987 and March 1988. Generally, groundwater at Mound Plant is of the calcium bicarbonate variety (Spieker 1968). The concentration of total dissolved solids is generally between 300 and 600 mg/L, which means the water is considered hard to very hard. Iron and manganese may also be present in objectionable quantities, depending upon the quantity of clay in the sediments (Spieker 1968). Variations from the calcium bicarbonate water occur within the wells completed in bedrock.

where are the results? ?

The Buried Valley aquifer has low specific conductance and has good general water quality. Some organic compounds have been detected in monitoring wells near the landfill and in Mound Plant production wells (MND01-0046, -0055, -0063, -0071, -0076, -0126, -0152, -0153, -0154, and -0271). Trichloroethene and tetrachloroethene have been detected above the Safe Drinking Water Act maximum contaminant level (MCL) of 5 μg/L (40 CFR 14), individually or in combination, at several locations (MND01-0046, -0055, -0063, -0152, and -0153). Tritium residual is below the MCL (20 nCi/L) in the Buried Valley aquifer as a result of the last remedial action in July 1989. The water quality data are contained in detail in the Area B and Main Hill Seeps Remedial Investigation Plan (DOE 1989a).

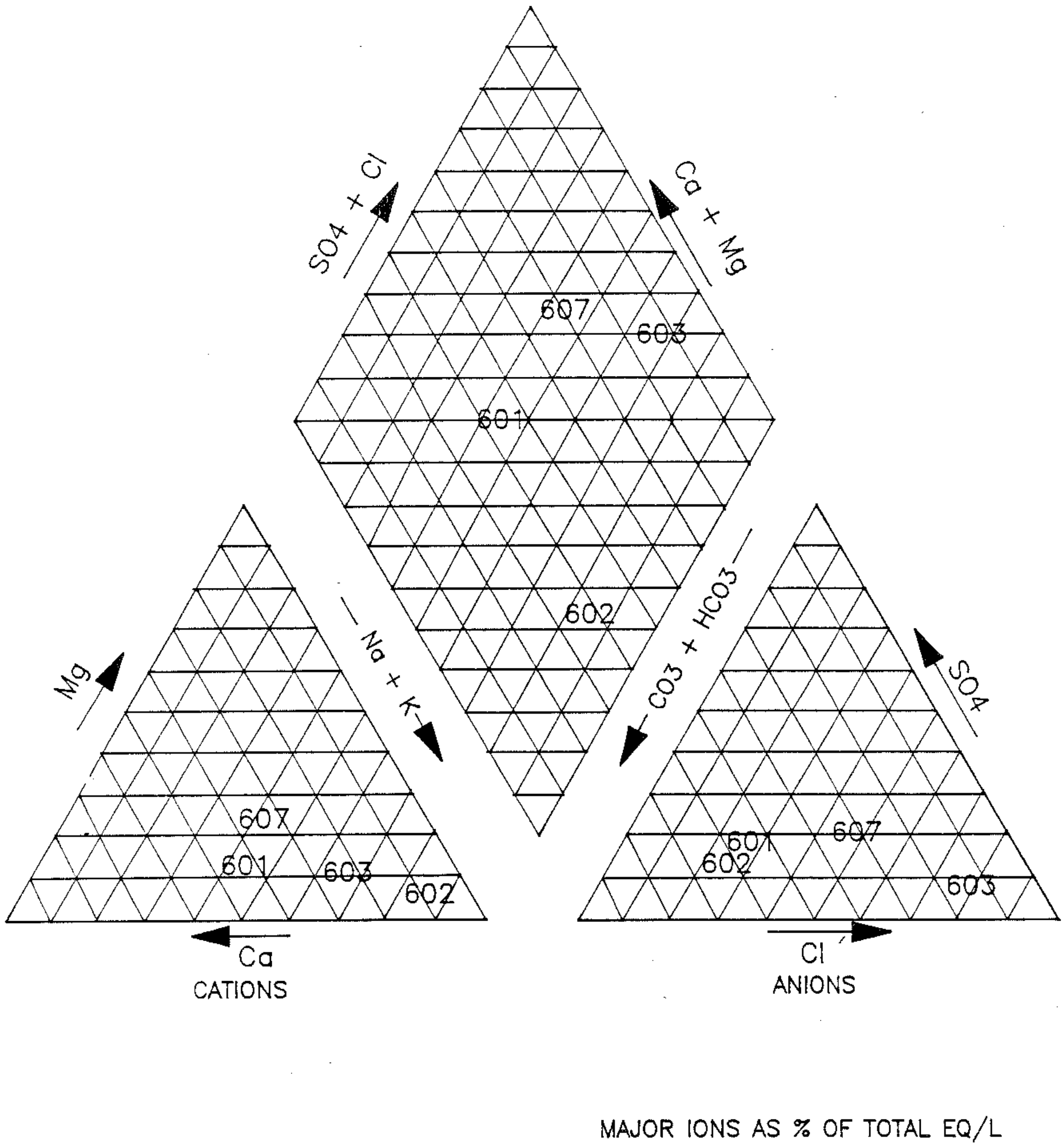


Figure 1.12. Trilinear diagram for seeps in December 1987.

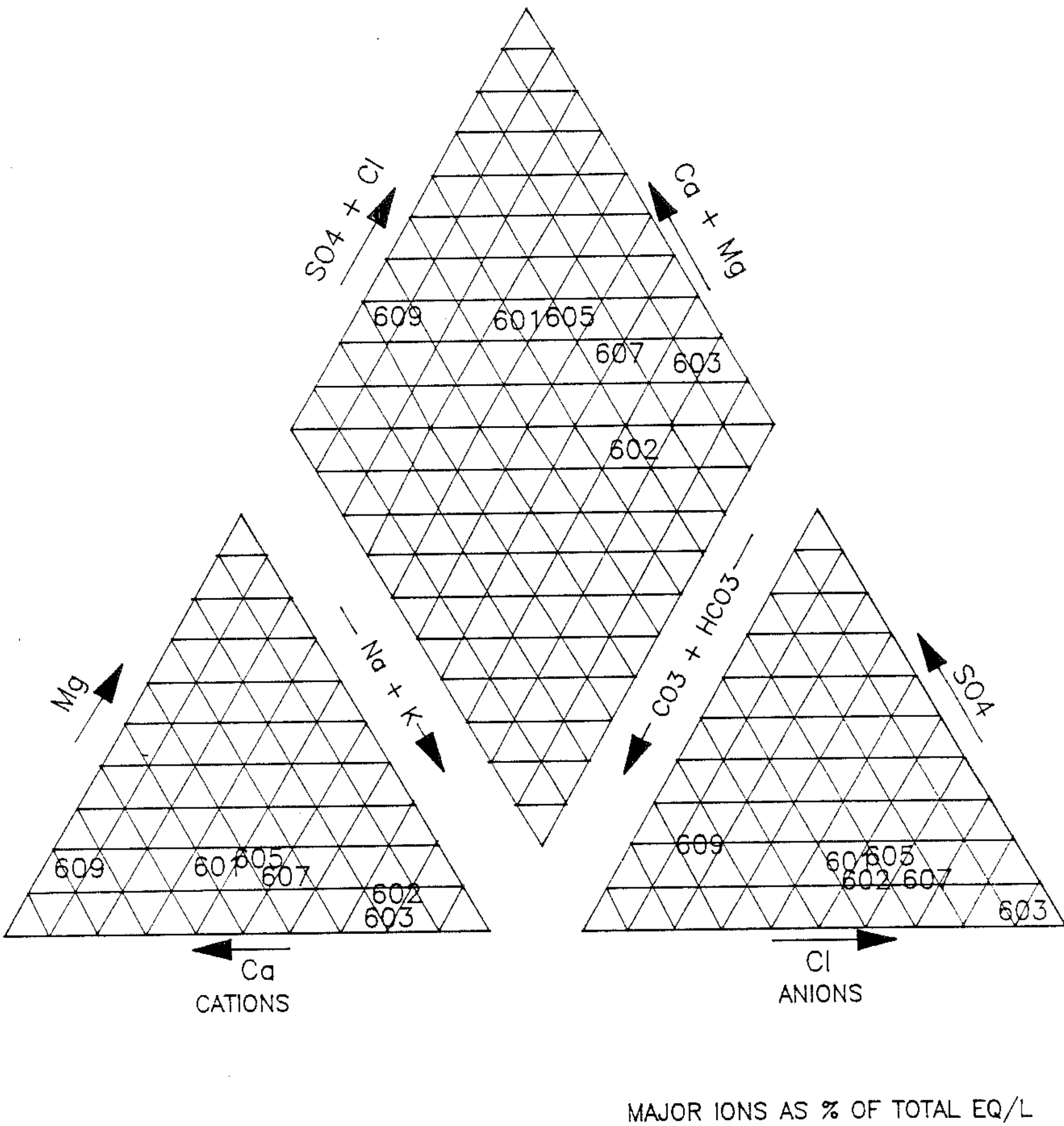


Figure 1.13. Trilinear diagrams for seeps in March 1988.

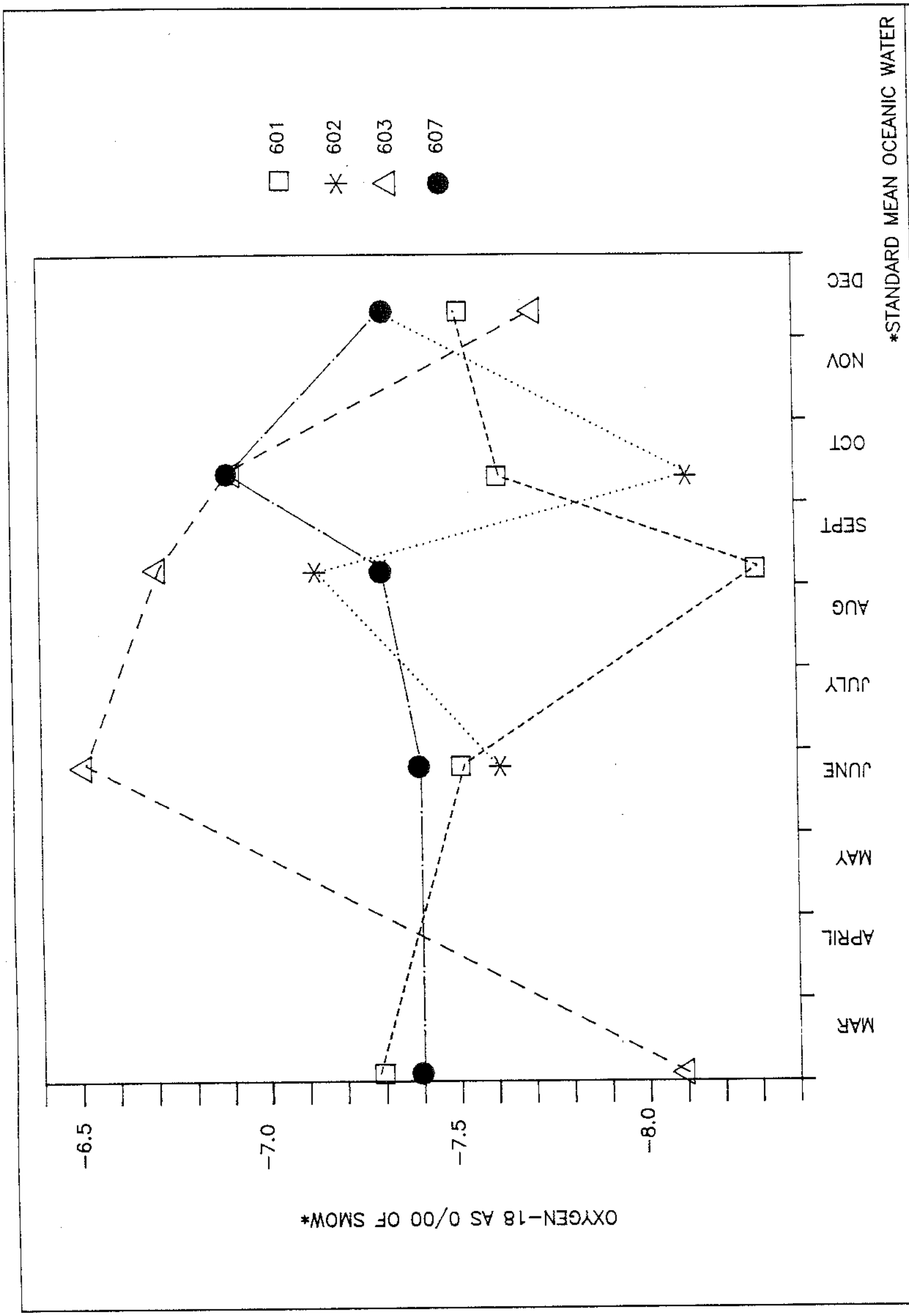


Figure 1.14. Oxygen-18 in 1987 seep discharge.

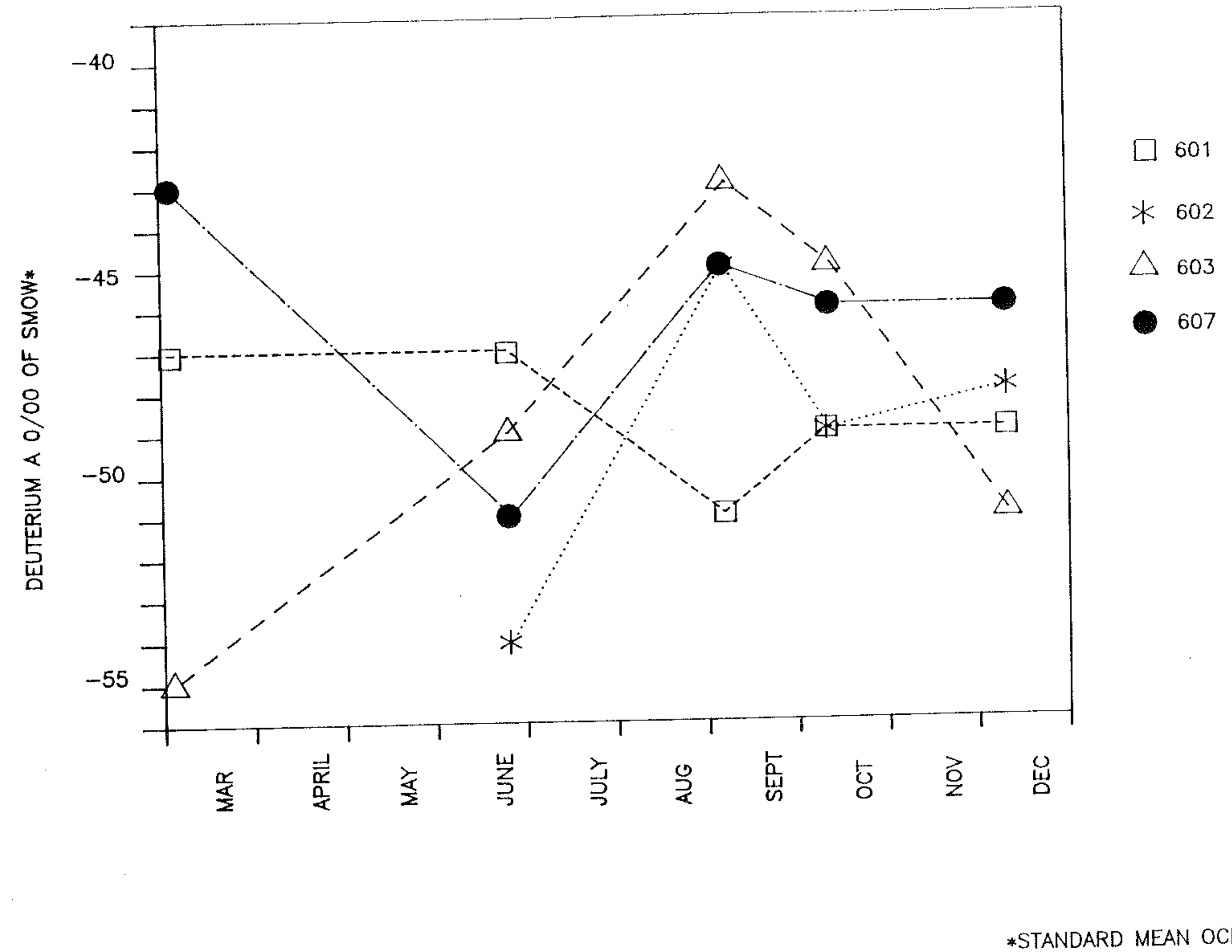


Figure 1.15. Deuterium in 1987 seep discharge.

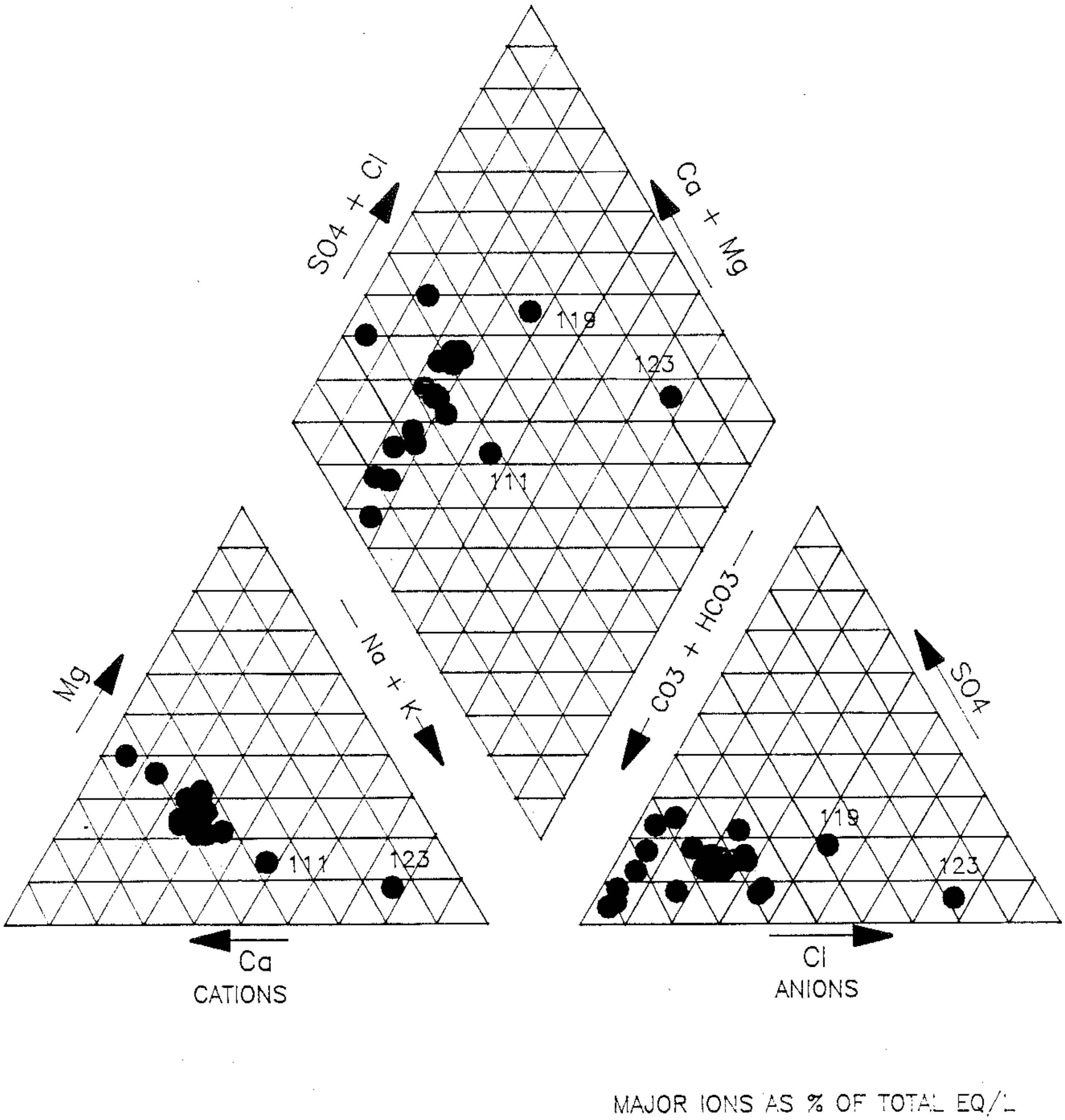


Figure 1.16. Trilinear diagram for groundwater in December 1987.

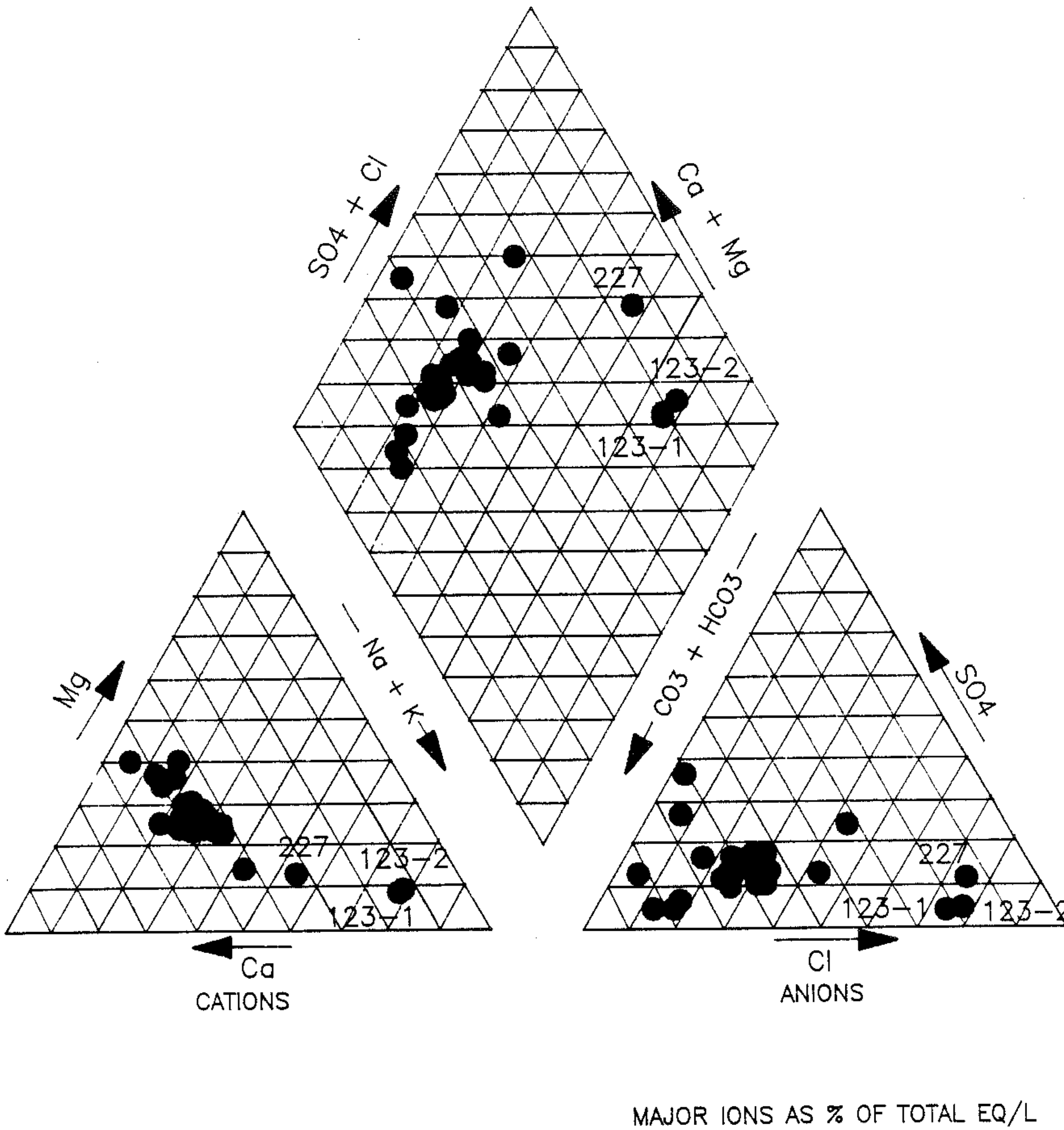


Figure 1.17. Trilinear diagram for groundwater in March 1988.

1.7. SAMPLING AND ANALYSIS SCOPE

1.7.1. Nature of Hazardous Constituent Contamination

This limited field investigation will obtain data that will identify specific contaminants or groups of contaminants present at individual potential release sites, or that were identified in past investigations or process documentation. If hazardous contaminants are detected, the data may serve as the first phase of a remedial investigation. If no hazardous contaminants are detected, the data collected may be used to eliminate the areas from further investigation.

Biased sampling will be performed. The sampling locations and depths have been chosen on the basis of the following causes for the possible presence of hazardous contaminants:

- release of contaminants due to leaks or spills as evidenced by stained or discolored soil; or

- release of contaminants in a specific area, based on what is known of the processes.

When there are no documented leaks, spills, or deposits of potentially hazardous contaminants, the area may be sampled systematically by establishing a grid. Sampling on a grid will allow average concentrations to be calculated if necessary.

To obtain these data, surface and/or subsurface soil samples from specific locations at each site will be analyzed for hazardous nonradioactive contaminants. The soil samples obtained from several locations within these areas will generally be individual samples; however, some may be composite samples. If necessary, water samples will also be obtained from existing monitoring wells and seeps in or near the areas of interest.

The soil and water samples will be analyzed for selected components from the Target Compound List (TCL) and Target Analyte List (TAL). The TCL and TAL are subsets of the EPA's list of hazardous substances (40 CFR 302.4) and they are given in the Contract Laboratory Program (CLP) 1987 Statement of Work (EPA 1987a). The CLP provides guidelines for analytical support requirements for EPA investigations at Superfund sites. The TCL analyses are used as a screening tool when the hazardous contaminants at a site are not known. The samples collected during this investigation will be analyzed according to CLP requirements.

1.7.2. Data Quality Objectives

Data quality objectives (DQOs) are selected according to the end uses of the data to be collected (EPA 1987b). The data from this limited field investigation will be used to determine the presence or absence of hazardous contaminants at specific locations in the areas of interest. If hazardous contaminants are detected, the data may serve as the first phase of a remedial investigation. If no hazardous contaminants are detected, the data collected may be used to eliminate the areas from further investigation. A data review and determination of Applicable or Relevant and Appropriate Requirements (ARARs) may be performed to determine if additional investigations are necessary at each potential release site.

The type of data collected at the RCRA Sites during this investigation will fall into three categories (EPA 1987b):

- Level I, data from field monitoring or field tests;
- Level II, field analyses using instruments in an onsite, mobile laboratory; and
- Level III, analyses performed in an offsite analytical laboratory.

Table I.3 describes the analytical levels in more detail (EPA 1987b).

These data may be used to eliminate areas from further investigation; therefore, the data collected at each site should be legally defensible. The Level III data with CLP data quality control (Table I.3) will provide this level of quality control and will provide legal defensibility.

1.7.3. Field Quality Control Samples

Several types of field samples will be taken in order to assess field quality control.

- Was QA sent to QAPP people?

Trip Blanks

Trip blanks are used to evaluate contamination that may be introduced into the samples during shipment. Vials of deionized/distilled ASTM Type 2 water are sent from the laboratory to be used as trip blanks. Two 40-mL vials will be placed in each shipping container with the samples. ASTM Type 2 water contains a maximum total matter of 0.1 mg/L, has a specific conductivity at 25°C of 1 μmho/cm, and minimum color retention time for permanganate of 60 minutes. These vials will then be analyzed for TCL volatile organics.

Rinsate Blanks

Rinsate blanks are used to evaluate the success of the equipment decontamination process. After decontamination, the sampling equipment is rinsed a final time with deionized/distilled ASTM Type 2 water. This rinsate is collected and analyzed for the same parameters as the soil samples collected that day. Typically, one rinsate blank is collected for every 20 samples, or one per day. Decontamination water is

Table I.3. Summary of Analytical Levels Appropriate to Data Uses (EPA 1987b)

Data Uses	Analytical Level	Type of Analysis	Limitations	Data Quality
Site characterization, monitoring during implementation	Level I	Total organic/inorganic vapor detection using portable instruments.	Instruments respond to naturally occurring compounds.	If instruments calibrated and data interpreted correctly, can provide indication of contamination.
		Field test kits.		
Site characterization, evaluation of alternatives, engineering design, monitoring during implementation	Level II	Variety of organics by GC, inorganics by AA, XRF.	Tentative identification.	Dependent on quality assurance/quality control steps employed.
		Tentative identification, analyte-specific.	Techniques/instruments limited mostly to volatiles, metals.	Data typically reported in concentration ranges.
		Field screening for plutonium and thorium.	Tentative identification and quantification.	Dependent on quality assurance/quality control steps employed.
		Detection limits vary from low ppm to low ppb.		
Risk assessment, site characterization, evaluation of alternatives, engineering design, monitoring during implementation	Level III	Organics/Inorganics, using EPA procedures other than CLP, can be analyte-specific.	Tentative identification in some cases.	Similar detection limits to CLP.
		RCRA characteristic tests.	Can provide data of same quality as Level IV.	Less rigorous quality assurance/quality control.
Risk assessment, evaluation of alternatives, engineering design	Level IV	TCL/TAL organics/inorganics by GCMS, AA, ICP.	Tentative identification of non-TCL/TAL parameters	Goal is data of known quality.
		Low ppb detection limit.	Some time may be required for validation of packages.	Rigorous quality assurance/quality control.
Risk assessment	Level V	Nonconventional parameters.	May require method development modification.	Method specific.
		Method-specific detection limits.	Mechanism to obtain services requires special lead time.	
		Modification of existing methods.		

GC - gas chromatography
AA - atomic absorption
XRF - X-ray fluorescence
MS - mass spectrometry
ICP - inductively coupled plasma
EPA - Environmental Protection Agency
CLP - Contract Laboratory Program
RCRA - Resource Conservation and Recovery Act
TAL - Target Analyte List
TCL - Target Compound List

also collected and composited separately from rinsate water. This water is analyzed for TCL VOCs to determine the appropriate method of disposal.

Ambient Blanks

Ambient blanks are used to evaluate contamination that may be introduced to the soil samples from the ambient work area. They are made by placing an open sample of deionized/distilled ASTM Type 2 water in the work area, then shipping it with the soil samples collected that day. Typically, one ambient blank is collected per work area and analyzed for TCL volatile organics.

Field Duplicates

Field duplicates are prepared to evaluate sample and sampling technique reproducibility. Although true duplicate soil samples are not possible because soil is not homogeneous, thorough mixing of the soil will help to make a more homogeneous sample. Because of this, field duplicates will be prepared only for soil samples and water samples where more sample is available. They will be analyzed for the same parameters as the original sample, with the omission of VOCs that are lost by the mixing process. The portion of the original soil sample needed for analysis of VOCs will be removed before the sample is mixed and split to form a duplicate. Typically, one field duplicate is collected per 20 samples.

Field duplicates will not be identified as duplicate samples. Rather, they will be assigned their own specific coded identification number. This will ensure that the laboratory will not be able to identify the samples as duplicates, and will not bias the analytical results.

1.8. GENERAL RCRA SITES, OPERABLE UNIT 7, FIELD PROCEDURES

1.8.1. RCRA Sites, Operable Unit 7, Presampling Activities

Before sampling is performed at the RCRA Sites areas, the soil sample locations described in subsequent sections will be identified and staked by field team personnel. In addition, the utilities present will be marked with spray paint by the field manager in cooperation with Mound Plant personnel. If a borehole location is too close to a marked utility, the location will be adjusted.

1.8.2. RCRA Sites, Operable Unit 7, Activities

Table I.4 presents the limited field investigation sampling activities for the RCRA Sites, Operable Unit 7, areas.

Table I.4. RCRA Sites, Operable Unit 7, Sampling Activities

Area	Recommended Action	Rationale for Sampling Strategy
Underground sewer lines	Biased sampling of soil.	Possible release of hazardous contaminants at locations of leaks or cracks.
Sewage Disposal Building area	Biased sampling of soil or sediment.	Possible release of hazardous contaminants where cracks or leaks are observed.
	Air sampling at the aeration basin.	Possible air releases of organic compounds from this component.
Sludge drying beds	No sampling required.	Sampling performed in 1989. - results?
yes Dredge spoil drying beds	Biased sampling of soil.	Possible release of hazardous contaminants where stained soil is observed. recommend sed. samples.
no Asphalt-lined pond	No sampling required.	Sampling performed in 1987. - results
no Retention basins sample	No sampling required.	Sampling performed in 1987.
no Overflow pond sample	No sampling required.	Sampling performed in 1987.
yes Oil burn structure	Biased sampling of soil.	Sample downgradient of the structure. suspected
yes Fire-fighting training facility	Biased sampling of soil.	Sample areas where stains or residue are present.
WD Building drum staging area	Biased sampling of soil.	Sample soil in areas where stains are present. also near base of concrete pad
yes Building 72 storage area	Biased sampling of soil.	Sample areas where stains are present and the catch basins.
Glass melter room sump - same as furnace?	Sample sediment.	Characterize hazardous contaminants in sediment. need to look at Furnace
Building 27 concrete flume	Determine integrity of flume and sample at cracks.	Possible release of hazardous contaminants due to leaks.
OB-2 Thermal treatment unit	Biased sampling of ash/debris and surface soil.	Possible release of hazardous contaminants in the ash-filled drum and in nearby soil.
Spoils disposal area	No sampling recommended.	No releases documented or observed. - is it tested? prior to disposal borings
Scintillation vial storage area	No sampling recommended.	No releases documented or observed.
Building 28 solvent storage area shed	No sampling recommended.	No releases documented or observed. suspected secondary containment

Table I.4. (continued)

Area	Recommended Action	Rationale for Sampling Strategy
DS Building solvent storage shed	No sampling recommended.	No releases documented or observed. - suspected in RFA
Building B solvent storage shed	No sampling recommended.	No releases documented or observed. - suspected in RFA
Hazardous waste storage area	No sampling recommended.	No releases documented or observed.
Radioactive/mixed waste storage area	No sampling recommended.	No releases documented or observed.
Drilling mud drum storage area	No sampling recommended.	No evidence suggesting contamination. Disposal pending DOE environmental survey analysis.
Building 27 solvent storage area	No sampling recommended.	No releases documented or observed.
Building B temporary drum storage area	No sampling recommended.	No releases documented or observed.
Test firing residual storage area	No sampling recommended.	No releases documented or observed.
Strainer	No sampling recommended.	No releases documented or observed.
AP-9 1-19 Iodine absorption filter	No sampling recommended.	No releases documented or observed.
Ventillation hoods	No sampling recommended.	Releases are regulated by Regional Air Pollution Control Authority.
OB-3 Retort	No sampling recommended.	No releases documented or observed.
Building 90 blockhouse	No sampling recommended.	No waste residue is produced or stored here.
Pyrotechnic waste shed	No sampling recommended.	No releases documented or observed. suspected
Biodegradation unit	No sampling recommended.	No releases documented or observed. suspected
Explosive waste storage bunker	No sampling recommended.	No releases documented or observed.
Building 1 sump	No sampling recommended.	No releases documented or observed.

Table I.4. (continued)

Area	Recommended Action	Rationale for Sampling Strategy
Building 27 sump	No sampling recommended.	No releases documented or observed.
Waste transport vehicles	No sampling recommended.	No releases documented or observed.
Cooling tower basins	No sampling recommended.	No releases documented or observed.
Glass melter feed drum	No sampling recommended.	No releases documented
Trash dumpsters	No sampling recommended.	No releases documented
Vapor degreaser	No sampling recommended.	No releases documented or observed.
NA SW Building drum staging area	No sampling recommended.	No releases documented or observed.
Glass melter furnace	No sampling recommended.	No releases documented or observed.
Air pollution control units off-gas treat-ment system	No sampling recommended.	No releases documented or observed.
Epoxy resin disposal	No sampling recommended.	Quantities are minute.

Building E solvent storage shed.
Waste Oil Drumfield
Cooling Tower Drum Storage area - collect samples of res. wash & soils adjacent to pad.

1.8.3. Drill Cuttings

Borehole cuttings and unused soil samples will be returned to the borehole after sampling is completed. ? Excess soil will be drummed for disposal by the Mound Plant waste management department. If necessary, the borehole will be grouted up to the surface.

1.8.4. Decontamination of Personnel and Equipment

Personnel and equipment will be decontaminated during the limited field sampling to prevent the cross-contamination of samples and locations, to protect field personnel, and to prevent the spread of contamination within Mound Plant and off the site. Personnel will be decontaminated as specified in the Health and Safety Plan before leaving the work area for breaks and at the end of the day.

Equipment decontamination will be carried out according to ER Program Standard Operating Procedure (SOP) 1.6, General Equipment Decontamination (revision 2) (DOE 1988). Following these decontamination procedures will minimize the possibility of spreading contamination. The decontamination water will be sampled and analyzed for TCL VOCs in order to identify potential contaminants and to verify proper decontamination procedures. One sample, consisting of two 40-mL glass vials, will be taken during the work at each area.

1.8.5. Handling and Shipment of Samples

Soil and water samples will be handled according to ER Program SOPs 1.3, Sample Control and Documentation (revision 3); 1.4, Sample Containers and Preservation (revision 2); and 1.5, Guide to Handling, Packaging, and Shipping (revision 2) (DOE 1988). Table 1.5 lists requirements for preservatives and containers used.

A portion (500 mL) of each soil sample collected from the RCRA Sites areas will be screened for radioactivity by the Mound Plant soil sample screening facility. The sample container for this screening will be provided by Mound Plant personnel. The screening results will be included with the corresponding samples shipped to the analytical laboratory. Samples with concentrations of radioactivity in excess of 2,000 pCi/g (2 nCi/g) will be shipped in the radioactive I category (white label) according to the requirements of 49 CFR 172 and 173. Special arrangements will also be made with the analytical laboratory for analyzing samples with concentrations of radioactivity greater than 10,000 pCi/g (10 nCi/g).

An additional 40 mL of soil or water may be obtained from each of the sampling locations. This sample will be placed in a glass vial with a Teflon-lined cap and designated for screening of radioactivity levels (tritium,

Table I.5. Preservative, Container Requirements

	Soil	Water
TCL VOAs	$4^{o}C$, VOA vial, teflon-lined cap (2 x 40 mL)	$4^{o}C$, VOA vial (2 x 40 mL)
TCL semivolatile organics, pesticides/PCBs	$4^{o}C$, amber glass, teflon-lined cap (500mL)	$4^{o}C$, amber glass (2 x 4 L)
TAL metals	$4^{o}C$, amber glass (500 mL)	$4^{o}C$, HNO_3 to pH<2, plastic (preferred) or glass (2L)
Hexavalent chromium	$4^{o}C$, amber glass (500 mL)	$4^{o}C$, HNO_3 to pH<2, plastic (preferred) or glass (1L)
PETN, RDX, HMX	$4^{o}C$, amber glass (500 mL)	$4^{o}C$, amber glass (2 x 4L)

TCL = Target Compound List
TAL = Target Analyte List

gross alpha, gross beta) by the analytical laboratory. The screening is used for the laboratory's license requirements only and is not part of the analytical package.

Although it is not anticipated that radioactive contamination will be present at the RCRA Site areas, screening will be performed as a health and safety precaution. Soil samples from the RCRA Sites areas will be screened in the field by field team members for the presence of plutonium-238, according to ER Program SOP 1.7, Near-Surface and Soil Sample Screening Using the FIDLER (revision 2) (DOE 1988). The Field Instrument for the Detection of Low Energy Radiation (FIDLER) will be calibrated to detect the 17-KeV x-ray emitted when plutonium-238 decays to uranium-234. This screening is not quantitative and is only intended to provide the field team with information concerning the relative radioactivity levels of the samples. This type of screening is required by Mound Plant when intrusive work is performed. In addition, a photoionization detector or combustible gas indicator will be used as specified in the Health and Safety Plan of this document.

Past results of water sampling at Mound Plant have shown that water samples contained levels of radioactivity much less than the shipping limit for exempt quantities (DOE 1989a). Therefore, water samples collected during this investigation will be shipped as environmental samples and will not be screened by Mound Plant.

1.8.6. Surveying Sampling Locations

For permanent identification, the RCRA Sites, Operable Unit 7, sampling locations will be surveyed according to the Mound Plant coordinate system; a system consisting of a grid described in terms of south and west lines. Horizontal and vertical controls will achieve a precision of ±0.1 ft for the horizontal position and ±0.01 ft for the vertical position. Surveying of the sampling locations will be conducted by a licensed surveyor after sampling is completed.

Unit No.: SD-10

Unit Name: Underground Sewer Lines

Unit Description: Underground Sewer Lines, located throughout the facility, are used to transport sanitary and industrial wastewater streams from the facility to the Sanitary Wastewater Treatment System (SWMUs SD-1 through SD-9). The Sewer Lines are constructed of vitrified clay, cast iron, or steel pipe with diameters ranging from four to ten inches (Ref. 95).

Date of Start-up: Early 1950s (Ref. 55).

Date of Closure: The Underground Sewer Lines are still in service.

Wastes Managed: The Underground Sewer Lines convey sanitary and industrial wastewater to the Sanitary Wastewater Treatment System. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from wastewater treatment is known to contain radionuclides but it does not contain RCRA-hazardous waste nor does it exhibit hazardous waste characteristics. Sources of wastewater conveyed by the Underground Sewer Lines include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: No release controls were noted in the file information or observed during the VSI.

History of Releases: There is documentation of past release from the Underground Sewer Line due to leakage from broken pipes. Previous investigations of the sewer system "indicated numerous pipe and joint breaks, cracks, misalignments, sags and obstructions." It is also thought that potentially contaminated groundwater from contaminated soil areas on-site may be infiltrating the sewer lines (Ref. 73, p. 3-33). Some repairs were made to the sewer line in order to limit contaminant discharges to underlying soil and groundwater.

Conclusions:	Soil/Groundwater:	Releases from the Underground Sewer Lines to soil and groundwater have been documented. It is not known whether releases are presently occurring.
	Surface Water:	The potential for release to surface water is high due to the proximity of the site to the Miami-Erie Canal. Subsurface discharges from the sewer could reach this surface water body through groundwater interflow.
	Air:	The potential for release to the air is low since the pipelines are below ground.
	Subsurface Gas:	There is a high potential for generation of subsurface gas since the wastewater contains solvents and pipeline leakage is documented.

(When was this done? Should this be done again?)

2. UNDERGROUND SEWER LINES

2.1. SITE HISTORY

2.1.1. Description of Underground Sewer Lines

The underground sewer lines located throughout the Mound Plant are used to transport sanitary and industrial wastewater and storm runoff from the plant to the sewage disposal building area (Building 57, Figure 1.3 and Composite Site Key Plan plate). The sewer lines are constructed of cast iron, vitrified clay, steel pipe, PVC, or concrete with diameters ranging from 4 to 12 inches (Kearney 1988).

A TV-screening survey was performed by Mound Plant personnel on the underground sewer lines to define sections of sewer lines that need to be repaired or replaced. If a sewer line was found to be damaged or broken and it was decided that the line would not be replaced, a fiberglass-like material was used to repair the line. For each repair, a sleeve of the fiberglass-like material was driven into the pipe by adding pressurized water to the line. This forced the material to conform and adhere to the pipe sidewall.

2.1.2. Potential Underground Sewer Lines Contaminants

Sanitary and industrial wastewater is carried to the sanitary wastewater treatment plant through the underground sewer lines. The sludge produced from the wastewater treatment is known to contain radionuclides and potentially contains other hazardous constituents. The sludge is being investigated as part of this operable unit (see sections 4 and 5). Sources of wastewater conveyed through the underground sewer lines include rest rooms, showers, laundry facilities, laboratory sinks, and rinses from a small metal-refinishing operation (Kearney 1988).

2.2. EXISTING SITUATION

Past releases from the underground sewer lines caused by leakage from broken pipes have been documented (Kearney 1988). In previous investigations of the sewer system, pipe and joint breaks, misalignments, cracks, sags, and obstructions were found (Mound 1989). Soil samples were collected during the DOE survey of Mound Plant (DOE 1987); however, the analytical results from that investigation are not available at this time.

If the invest. was completed in 1987, why aren't the analytical results available?

SD-10

2.3. FIELD INVESTIGATION

2.3.1. Sampling Objectives and End Use of Data

The objective of sampling adjacent to some of the underground sewer lines is to identify releases of hazardous contaminants that may have resulted from leakage. If hazardous contaminants are present in any of the samples from this limited field investigation, a more extensive remedial investigation may be performed.

The data obtained from this investigation of the underground sewer lines may be used to

- identify releases of hazardous contaminants with the potential to contaminate the groundwater;
- identify sections of the underground sewer lines that require additional investigation; or
- establish that no releases of hazardous contaminants have occurred at any of the underground sewer line locations that have been sampled, and show that there is no need for further investigation.

2.3.2. Sampling Locations

what about new leaks?

Environmental samples will be collected at locations where leakages may have occurred (Mound Personnel 1989). These locations were identified based on the TV-screening that was previously performed at areas where cracks or breaks occurred. In situations where a sewer line extends beneath inaccessible areas, environmental samples will be collected at the closest accessible downgradient location to the suspected release.

why wouldn't it be accessible?

The Mound Plant sanitary and industrial sewer system has many components and the system of sewer lines is defined by a grid (Composite Site Key Plan plate). Some of the soils or sediment within this grid system that are suspected of being contaminated will be sampled as part of other sampling activities in this operable unit (for example, the sludge drying beds) or other ER Program operable units. The grids containing soils that may be contaminated and warrant sampling in this investigation are given in Table II.1. Figures 2.1 to 2.8 provide more detail on the locations of the sewer lines.

2.3.3. Sampling Activities

Table II.2 presents the underground sewer lines sampling specifications.

Table II.1. Sampling Grids

Grid No.	Sampling Strategy
G5	Collect soil samples near sewer line as part of limited field plan outlined in Section 4, Sludge Drying Beds (Figure 2.1).
G6	Auger one boring to 10 ft, between manholes 210 and 208. Collect two soil samples from boring to determine if a release of hazardous contaminants has occurred (Figure 2.2).
G7	Collect a grab sample of sediment at manhole SD1008A, if possible (Figure 2.3).
G12	Auger one boring to 10 ft, approximately 4 ft west of manhole 112, where mud and roots were identified at the joint. Collect two soil samples from boring to determine if a release of hazardous contaminants has occurred (Figure 2.4).
G14	Auger one boring to 10 ft, between manholes 103 and 328-4. Collect two soil samples from boring to determine if a release of hazardous contaminants has occurred (Figure 2.5).
G15	Auger one boring to 10 ft, approximately 42 ft west of manhole 120-2, in the location where mud was identified at the joint. Collect two soil samples from boring to determine if a release of hazardous contaminants has occurred (Figure 2.6).
G19/14	Auger one boring to 10 ft, between abandoned manholes 326 and 328. Collect two soil samples from boring to determine if a release of hazardous contaminants has occurred (Figure 2.7).
G24	Auger one 10-ft-deep boring northwest of manhole 60 in area where topography allows access for drill rig. Auger second boring to 10 ft, between manholes 2-2 and 2-3. Collect two soil samples from each boring to determine if a release of hazardous contaminants has occurred (Figure 2.8).

Soil samples should be collected adjacent to & below pipe.

Ref: Composite Site Key Plan Plate

~ how deep is the pipe?

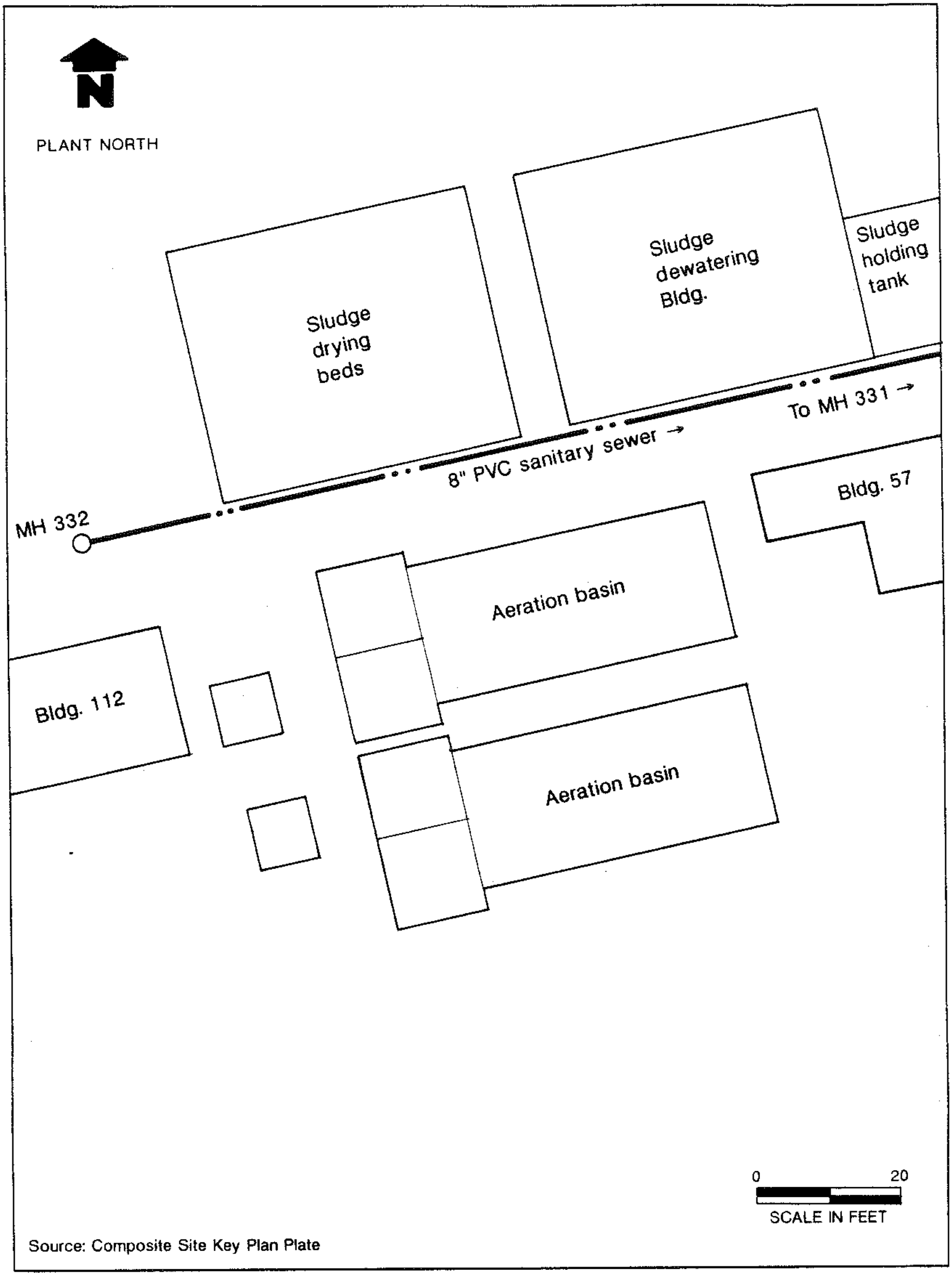


Figure 2.1. Grid G5.

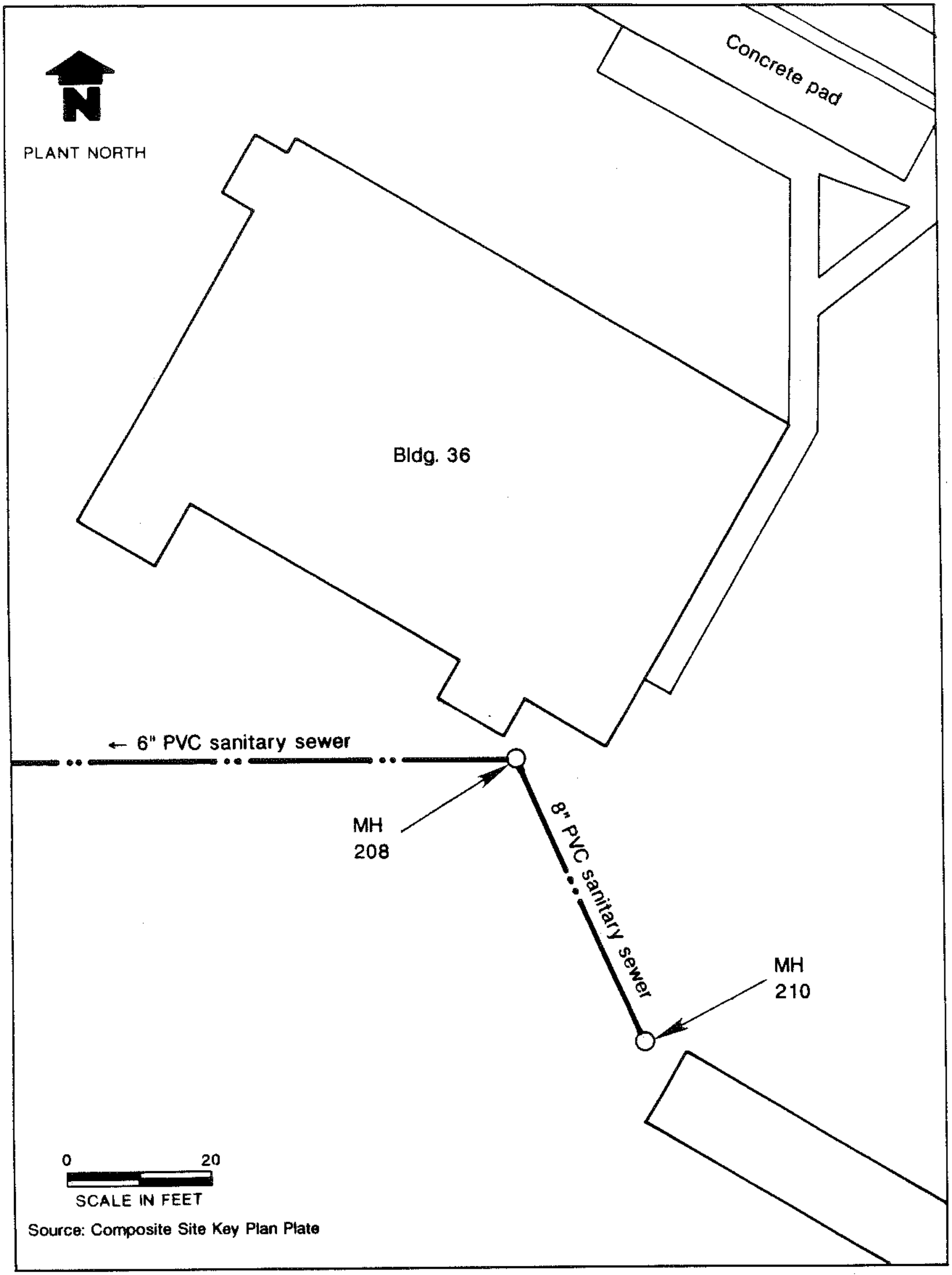


Figure 2.2. Grid G6.

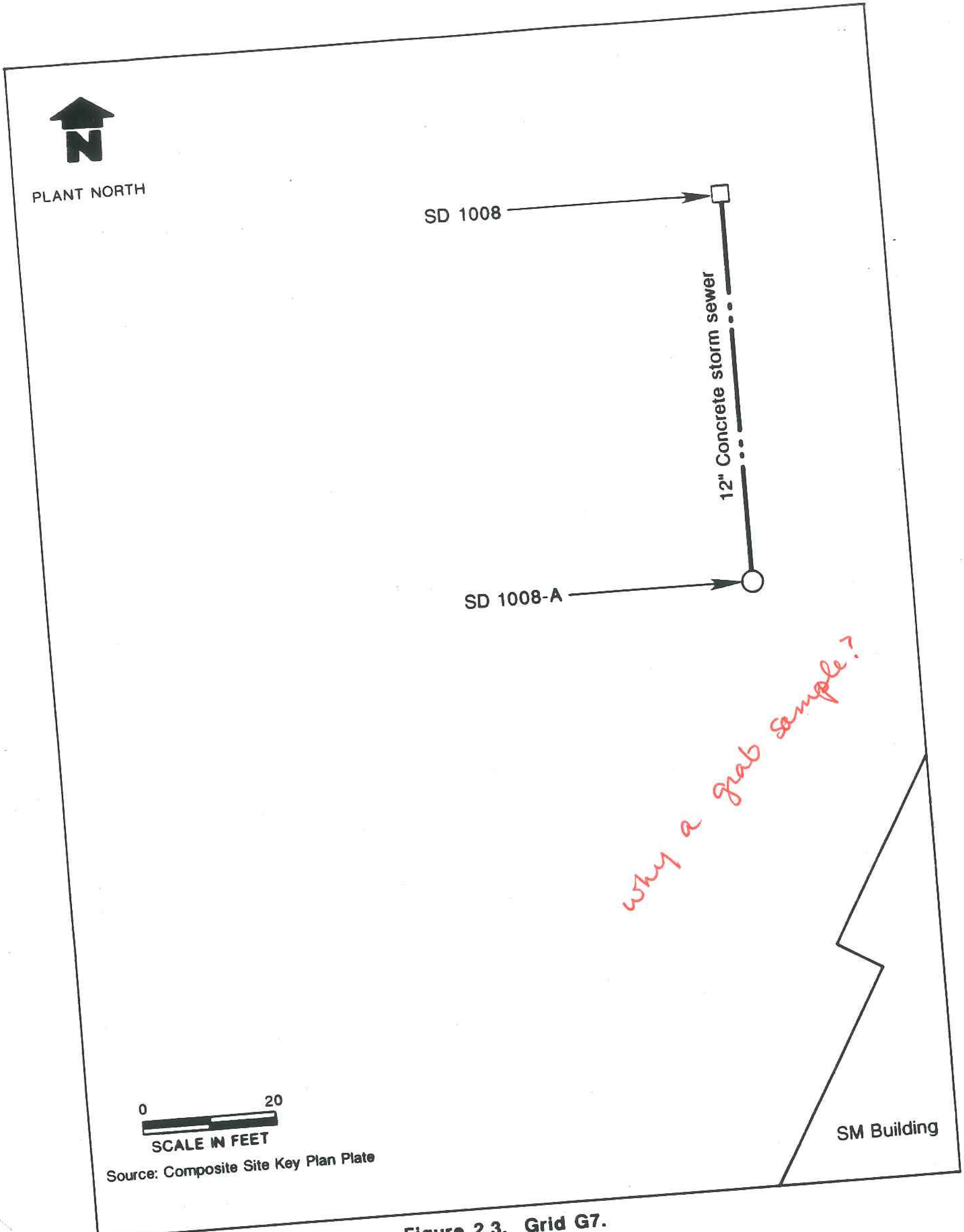


Figure 2.3. Grid G7.

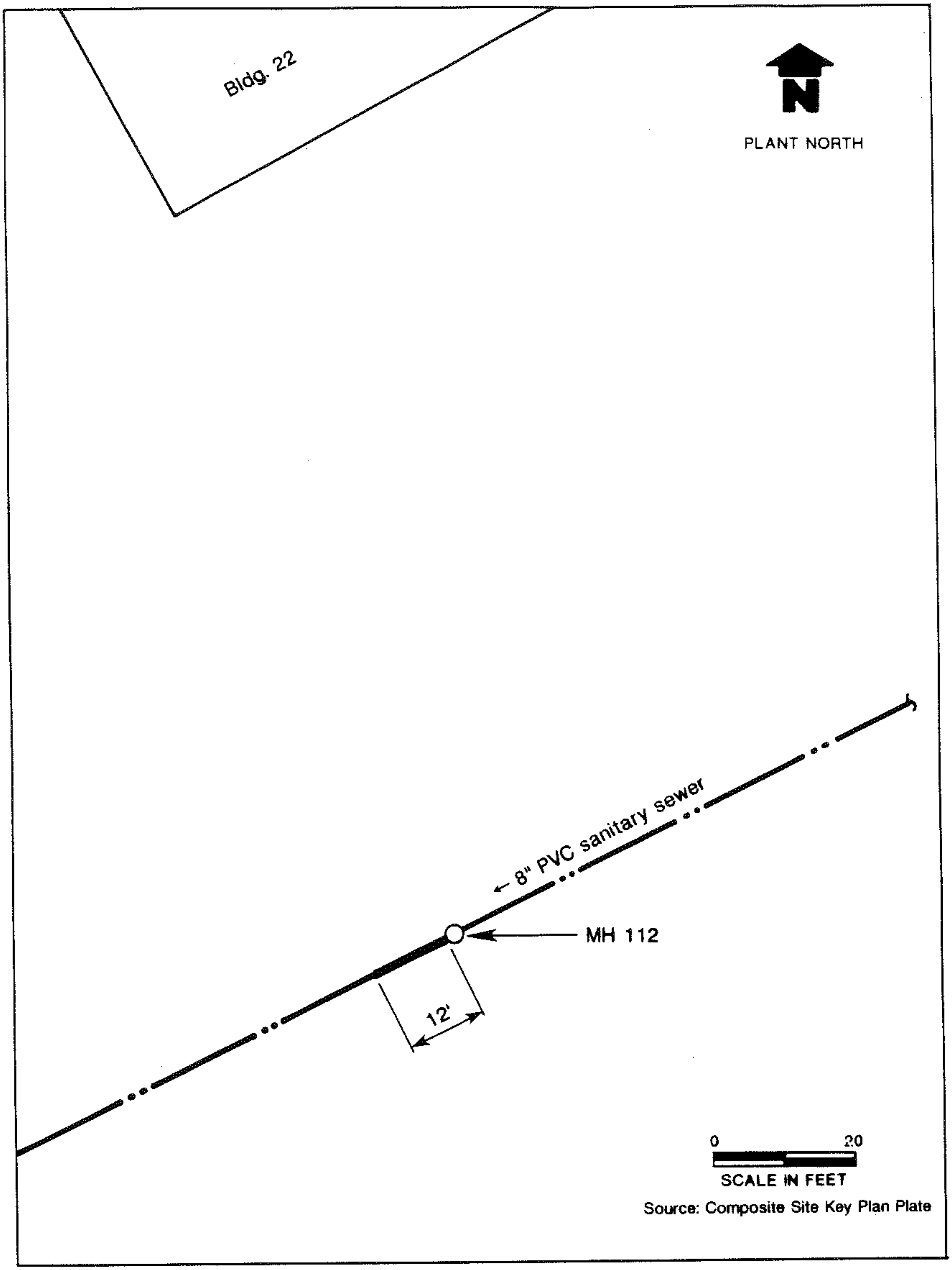


Figure 2.4. Grid G12.

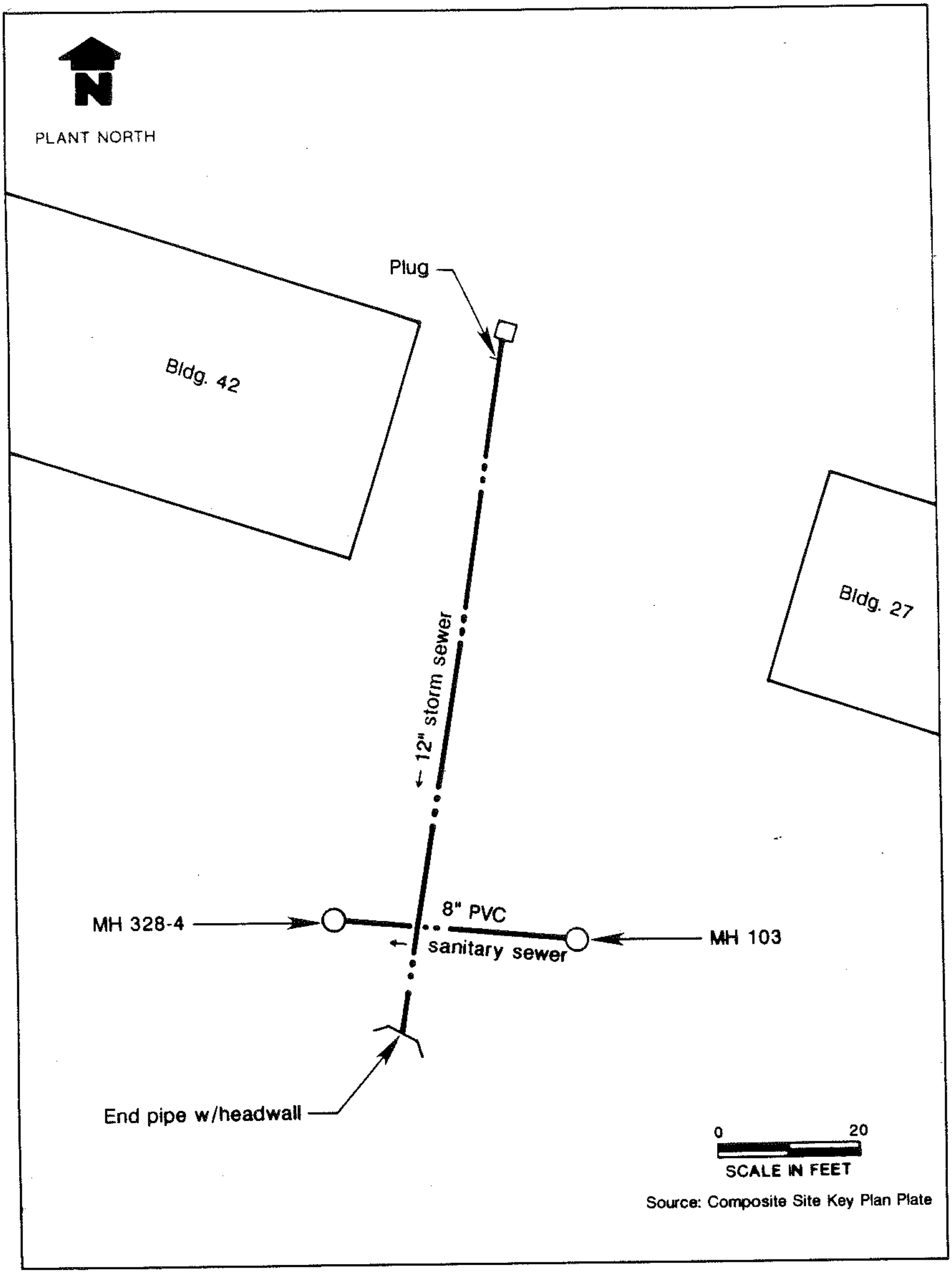
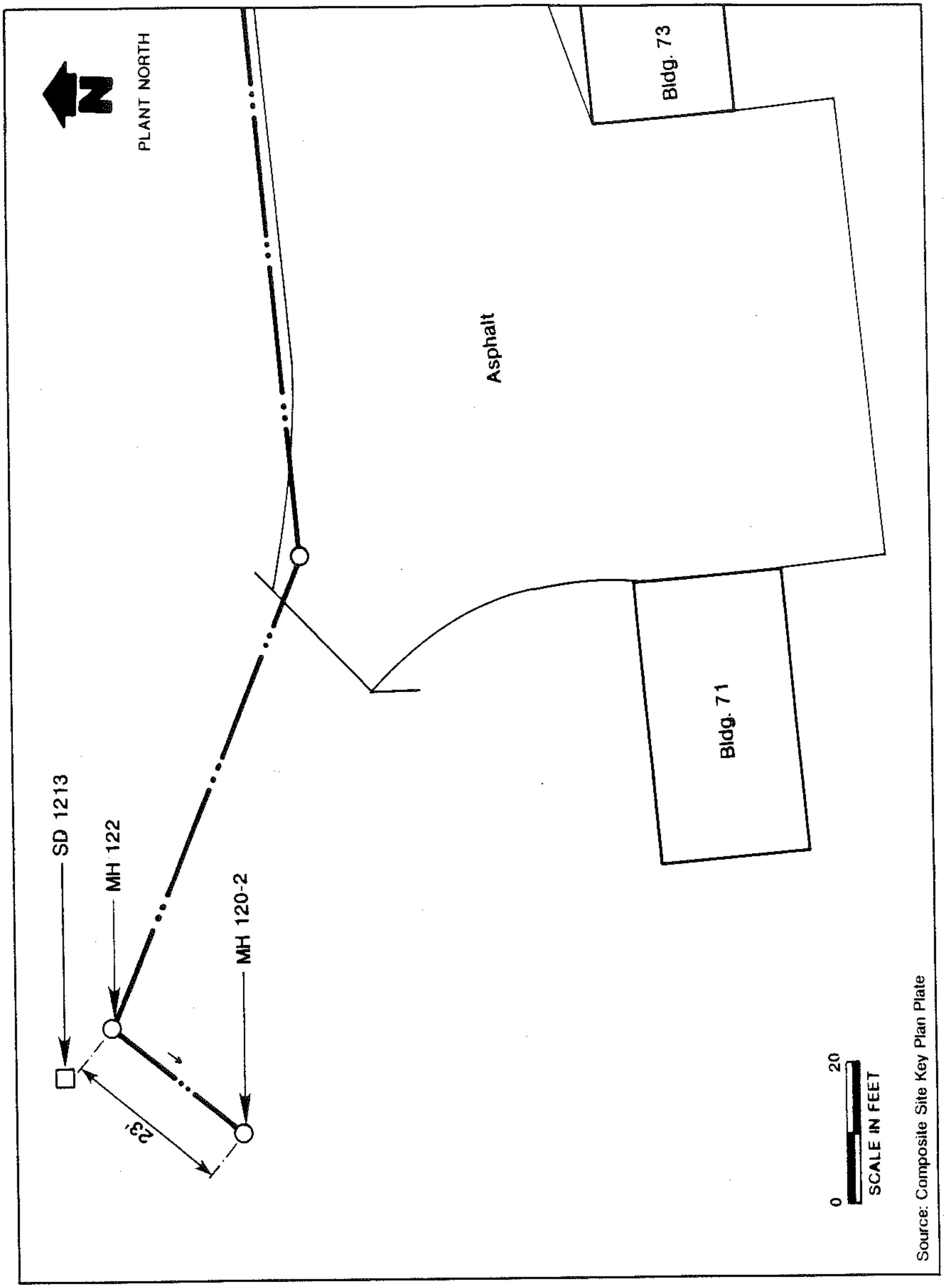


Figure 2.5. Grid G14.



Source: Composite Site Key Plan Plate

Figure 2.6. Grid G15.

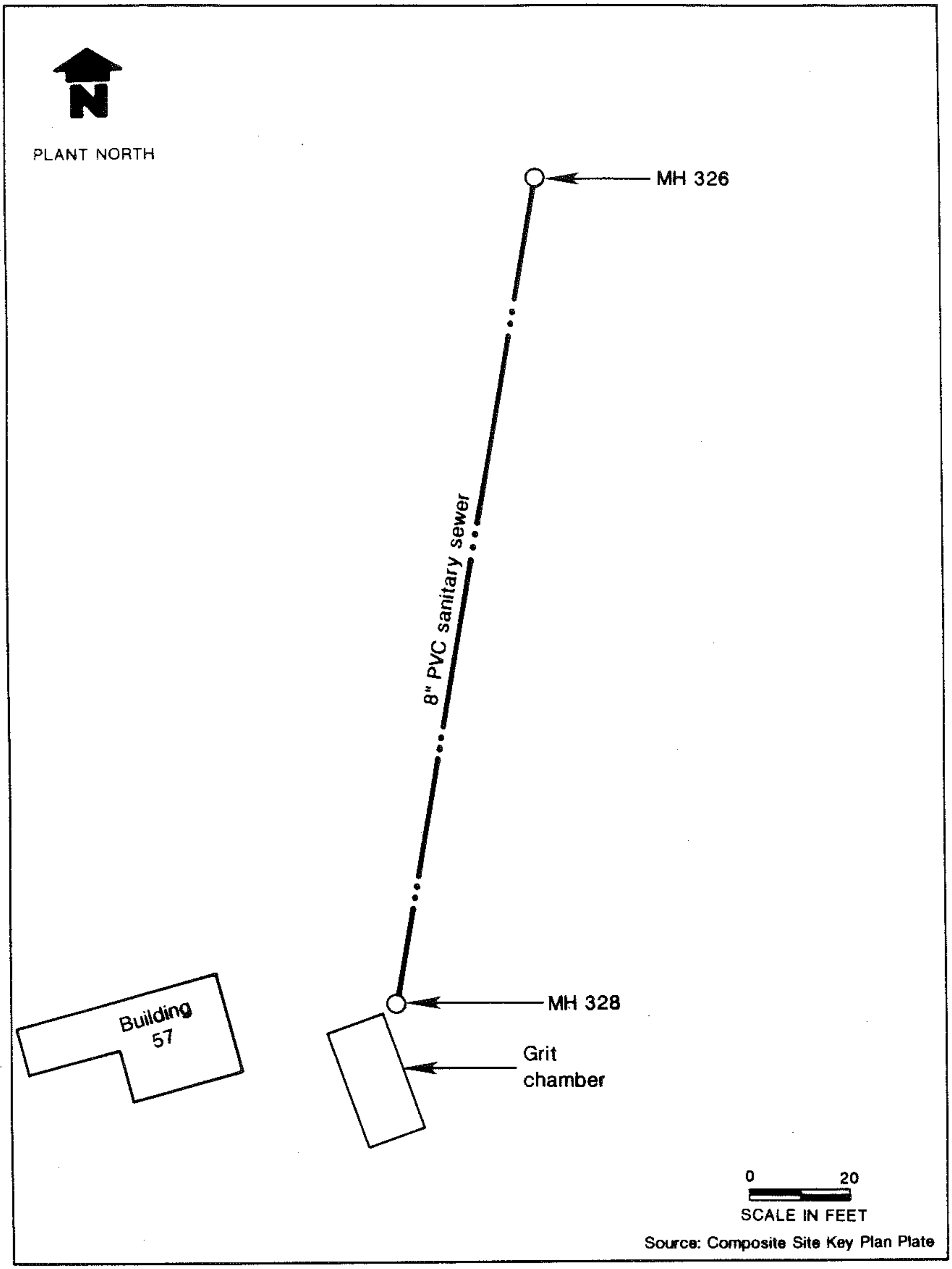


Figure 2.7. Grid G19/14.

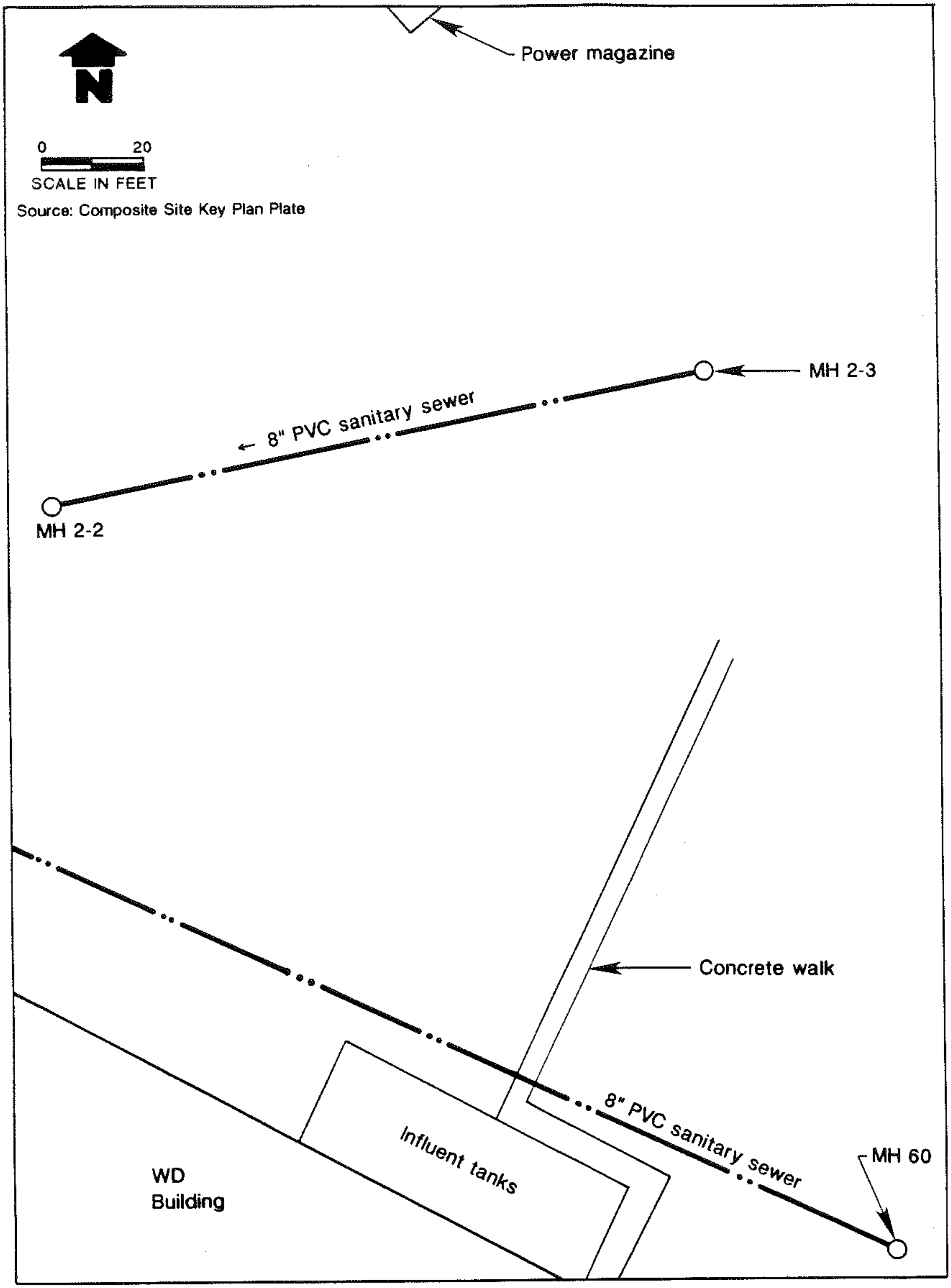


Figure 2.8. Grid G24.

Table II.2. Sampling Specifications for the Underground Sewer Lines

<u>Drilling Program</u>

Number of Boreholes: 7
Depth of Boreholes: 10 ft
Total Drilling Footage: 70 ft
Drilling Technique: Hollow-stem auger and split-barrel sampler

<u>Environmental Samples</u>

Subsurface Samples[a]

Number: 14
Depth: 5 and 10 ft[b]
Analytical Parameters: TCL/TAL volatile organics, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives

<u>Field Quality Control Samples</u>

Trip Blanks

Number: 1 per shipping container containing samples to be analyzed for TCL VOCs
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL volatile organics, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives

Ambient Blanks

Number: 1
Analytical Parameters: TCL VOCs

Field Duplicates[c]

Number: 2 subsurface soil samples
Analytical Parameters: TCL/TAL semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives

Decontamination Water

Number: 1
Analytical Parameters: TCL VOCs

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[a]The boreholes will be drilled and the samples obtained using a hollow-stem auger and split-barrel sampler according to ER Program SOPs 4.1, Soil Boring (revision 2); and 5.1, Soil and Rock Borehole Logging and Sampling (revision 2) (DOE 1988). Each sample will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]Sampling will be at 5-ft and 10-ft depths, unless PID or visual observation indicate otherwise.

[c]Field duplicates will be collected from the single depth of each of two separate boreholes. The portion of the original core (60 mL) needed for VOCs analyses will be removed first. The remainder of the field duplicate will be analyzed for TCL/TAL semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives. For this sample only, a total of 2,100 mL of soil is needed and will be split to form a duplicate.

2.3.4. Soil Sample Collection Protocol

start at or below sewer line.

The soil samples collected near the underground sewer lines will be single samples. Each sample will be collected at a discrete depth (5 or 10 ft) and will be analyzed for TCL VOCs, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives. Fourteen subsurface samples plus two field duplicates will be collected. A total of 1,350 mL is required for each sample, to be used as follows:

- 60 mL of soil in an amber glass container for TCL VOCs;
- 500 mL of soil in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;
- 250 mL of soil in an amber glass container for RDX, HMX, and PETN explosives;
- 500 mL of soil in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL of soil in a glass vial for screening by the analytical laboratory.

The 60 mL of soil necessary for TCL VOCs analysis will be immediately collected and containerized, followed by the collection and containerizing of the 1,290 mL of soil necessary for the remaining analyses.

A total of 14 soil samples will be collected and analyzed for TCL VOCs, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives. Two samples (field duplicates) will be analyzed for TCL semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives.

Unit No.: SD-1

Unit Name: Grit Chamber

Unit Description: The Grit Chamber is the initial component of the Sanitary Wastewater Treatment Plant located outdoors east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Other components of the treatment system include the Comminutor (SWMU SD-3), four Equalization Basins (SWMU WD-4), two Aeration Basins (SWMU SD-5), two Clarifiers (SWMU SD-6), two Sand Filters (SWMU SD-7), four Chlorine Contact Chambers (SWMU SD-8), and four Sludge Drying Basins (SWMU SD-9). Treated effluent is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater per day is treated by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Grit Chamber is the first treatment unit in the system. It is an open-topped, in-ground tank approximately 10 feet on each side and 10 to 12 feet deep. The sides and bottom of the unit are constructed of 12-inch thick concrete. Wastewater enters the chamber by gravity flow through a below-ground pipe. In the Grit Chamber, heavy solids settle out of the wastewater and are raked into a Grit Conveyor (SWMU SD-2). The collected solids are then dried in the Sludge Drying Beds before they are transported to an off-site disposal area. Wastewater effluent is discharged from the Grit Chamber to the Comminutor (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The unit is still in service.

Wastes Managed: The Grit Chamber receives sanitary and industrial process effluent (Ref. 53) including spent solvents from laboratory sinks and floor drains (Ref. 81). The sludge produced is known to contain radionuclides but it does not constitute a RCRA-listed hazardous waste nor does it have hazardous waste characteristics. An analysis of the wastewater effluent for hazardous constituents is not available. The sludge is packaged for shipment as a low-level radioactive waste to the Nevada Test Site. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinse from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chloride (Ref. 81, p. 4-13).

Release Controls: The freeboard in the Grit Chamber was approximately six feet during the VSI. Overtopping of the unit is prevented by metering the influent wastewater flow. The soil in the vicinity of the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater would be discharged via this catch basin to the Retention Basins or Overflow Pond (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom of the unit was not observed since the unit was in operation and covered with wastewater; however, the concrete walls of the Grit Chamber appeared to be in good condition. No cracks or excessive wear of the concrete was observed.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is low due to the observed integrity of the concrete sides and bottom of the unit.

Surface Water: The potential for direct releases to surface water is low due to the large freeboard maintained in the chamber. If overtopping occurred, the wastewater would be released to the Miami-Erie Canal and Great Miami River through the Retention Basins and the Overflow Pond.

<u>Air</u>:	The potential for release to the air is moderate since solvents are present in the wastewater and because the Grit Chamber is open-topped.
<u>Subsurface Gas</u>:	The potential for generation of subsurface gas is low since the unit is lined with concrete.

Unit No.: SD-2

Unit Name: Grit Conveyor

Unit Description: The Grit Conveyor is a screw conveyor which lifts settled solids out of the Grit Chamber so the solids can be transported to the Sludge Drying Beds (SWMU SD-9). The unit extends to the bottom of the Grit Chamber and conveys the solids approximately three feet above-ground. The point of grit discharge is approximately six feet from the Grit Chamber (Ref. 84).

Date of Start-up: 1975 (Ref. 48).

Date of Closure: The unit is still in service.

Wastes Managed: The sludge produced in the Sanitary Wastewater Treatment System is known to contain radionuclides but it does not constitute a RCRA-listed hazardous waste nor does it have hazardous waste characteristics. The sludge is packaged for shipment as a low-level radioactive waste to the Nevada Test Site.

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chloride (Ref. 81, p. 4-13).

Release Controls: The solids from the Grit Conveyor are drummed and dumped into the Sludge Drying Beds. The conveyor is surrounded by a metal cover and the unloading area is underlain by a concrete pad. Excess liquids from the conveyor are drained back into the treatment system (Ref. 84).

History of Releases: There was no record of releases in the file information observed during the VSI. The Grit Conveyor was not operated during the VSI.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is low. The solids and

	liquids are fully contained in the conveyor above-ground over a concrete pad.
Surface Water:	Since the wastes are contained above-ground the potential for surface water releases is low.
Air:	The potential for air releases is moderate during unloading of waste from the conveyor to the drum.
Subsurface Gas:	There is no potential for generation of subsurface gas from this above-ground unit.

Unit No.: SD-3

Unit Name: Comminutor

Unit Description: The Comminutor is an outdoor component of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Comminutor is an open-topped, in-ground unit which receives wastewater effluent from the Grit Chamber (SWMU SD-1). The bottom and sides of the unit are lined with concrete. At the Comminutor, the floating or suspended solids are cut up to smaller more uniformly sized pieces to improve the efficiency of downstream treatment operations. The Comminutor is approximately five feet on a side and ten feet deep. Treated effluent is discharged from the Comminutor to the Equalization Basins (SWMU SD-4).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The unit is still in service.

Wastes Managed: The Comminutor receives sanitary and industrial process effluent from the Grit Chamber. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from the treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The Comminutor is concrete-lined and freeboard was approximately six feet during the VSI. The wastewater level in the unit is controlled by gravity feed from the Grit Chamber. The ground surface in the vicinity of the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the Comminutor would be discharged through this catch basin to the Retention Basin (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom of the unit was not seen since the unit was in operation and covered with wastewater; however the concrete walls of the Comminutor appeared to be in good condition. No cracks or excessive wear of the concrete was observed.

Conclusions:

<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is low due to the observed integrity of the concrete walls of the unit.

<u>Surface Water</u>: The potential for direct releases to surface water is low to moderate. If over-topping occurred the wastewater would be released to the Great Miami River through the Retention Basins and the Overflow Pond. The release potential is minimized due to the large freeboard maintained in the chamber.

<u>Air</u>: The potential for release to the air is low due to the relatively inert and dilute nature of the wastewater. The potential for release to the air would be high if larger

volumes of volatile constituents were present in the wastewater since the Comminutor is open-topped.

<u>Subsurface Gas</u>: The potential for generation of subsurface gas is low since the unit is lined with concrete and the wastewater is relatively dilute.

Unit No.:	SD-4
Unit Name:	Equalization Basins (4)
Unit Description:	The Equalization Basins are four outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8). The Equalization Basins are in-ground, open-topped units which receive wastewater from the Comminutor (SWMU SD-3). The bottom and sides of the basins are constructed of metal. The function of the Equalization Basins is to mix the wastewater to keep solids in suspension and to maintain aerobic conditions. Two of the basins were approximately 12 to 15 feet on each side. and approximately 10 feet deep. Effluent is discharged from the Equalization Basins to the Aeration Basins (SWMU SD-5).
Date of Start-up:	1975 (Ref. 84).
Date of Closure:	The units are still in service.
Wastes Managed:	The Equalization Basins receive sanitary and industrial process effluent from the Comminator. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The basins are constructed of metal and the freeboard on them was approximately two feet during the VSI. The ground surface in the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the Equalization Basins would be discharged through this catch basin to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom and sides of the basins could not be inspected since the basins were filled with wastewater. No releases were observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown since the sides and bottom of the unit could not be observed and its containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. The freeboard is approximately two feet and if over-topping occurred, the wastewater would be released to the Great Miami River through the Retention Basins and the Overflow Pond.

Air: There is a moderate potential for release to the air from this unit since it is open-topped and because the mixing action in the unit may enhance evaporation of even small concentrations of volatile constituents in the wastewater.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is constructed of metal and the wastewater is relatively dilute.

Unit No.:	SD-5
Unit Name:	Aeration Basins (2)
Unit Description:	The Aeration Basins are two outdoor components of the Sanitary Wastewater Treatment System, located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8). The Aeration Basins are in-ground, open-topped units which receive effluent from the Equalization Basins (SWMU SD-4). The bottom and sides of the basins are metal. Wastewater in the Aeration Basins is aerated to improve its treatability and to promote uniform distribution of suspended solids. The basins were approximately 40 feet long, 20 feet wide, and 10 feet deep. Aerated effluent from the basins is discharged to the Clarifiers (SWMU SD-6) (Ref. 84).
Date of Start-up:	1975 (Ref. 84).
Date of Closure:	The units are still in service.
Wastes Managed:	The Aeration Basins receive sanitary and industrial process effluent from the Equalization Basins. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73). It is reported that some lab sinks receive small quantities of solvents,

photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The basins are constructed of metal and the freeboard on them was approximately two feet during the VSI. The ground surface in the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the basins would be discharged via this catch basin to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom and sides of the basins could not be inspected since the basins were filled with wastewater. No releases were observed during the VSI.

Conclusions:

<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is unknown since the sides and bottom of the unit could not be observed and its containment integrity could not be determined.

<u>Surface Water</u>: The potential for direct releases to surface water is moderate. The freeboard is approximately two feet and the wastewater would be released to the Great Miami River via the Retention Basins and the Overflow Pond.

<u>Air</u>: There is a moderate potential for release to the air from this unit since it is open-topped and because the mixing action in the unit may enhance evaporation of even small concentrations of volatile constituents in the wastewater.

<u>Subsurface Gas</u>: The potential for generation of subsurface

gas is low since the unit is constructed of metal and the wastewater is relatively dilute.

Unit No.: SD-6

Unit Name: Clarifiers (2)

Unit Description: The Clarifiers are two outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Clarifiers are in-ground, open-topped units which receive wastewater effluent from the Aeration Basins (SWMU SD-5). The Clarifiers are rectangular-shaped and have metal sides and bottoms. The objective of clarification is to remove readily settleable solids and floating material to reduce the suspended solids content. The Clarifiers are approximately 20 feet long, 10 feet wide, and 10 feet deep. Clarified effluent is discharged to the Sand Filters (SWMU SD-7) for further treatment. Sludge produced in the Clarifiers is removed and placed in the Sludge Drying Beds (SWMU SD-9) (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Clarifiers receive sanitary and industrial process effluent from the Aeration Basins. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The basins are constructed of metal and the freeboard was approximately two feet during the VSI. The ground surface in the Sanitary Wastewater Treatment System is covered with asphalt and is sloped to the west toward a catch basin. Storm runoff and any releases of wastewater from the Clarifiers would be discharged through this catch basin to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2) (Ref. 84).

History of Releases: There were no releases noted in the file information. During the VSI, the bottom and sides of the Clarifiers could not be inspected since they were filled with wastewater. No releases were observed during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is unknown since the sides and bottom of the unit could not be observed and their containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. The observed freeboard was approximately two feet and if overtopping occurred the wastewater would be released to the Great Miami River via the Retention Basins and the Overflow Pond.

Air: The potential for release to the air is low due to the relatively inert nature of the wastewater. The potential for release to the air would be high if volatile constituents were present in the wastewater since the Clarifiers are open-topped.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is constructed of metal and the wastewater is relatively dilute.

Unit No.: SD-7

Unit Name: Sand Filters (2)

Unit Description: The Sand Filters are two indoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The systems' design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Sand Filters are located in a small building west of the Clarifiers (SWMU SD-6). They are fully enclosed, cylindrical units approximately 12 feet high and four feet in diameter. Wastewater is pumped to the Sand Filters at an average rate of 70 gallons per minute through the bottom of the cylinder and discharges through the top. The filters are completely above-ground and are constructed of metal. They were installed to reduce the suspended solids concentration in the wastewater effluent (Ref. 51). Only one Sand Filter is operated at a time. Filtered effluent is discharged to the Chlorine Contact Chambers (SWMU SD-8) before being discharged offsite. Backwash water which periodically cleanses the filters is discharged back to the Comminutor (SWMU SD-3) (Ref. 53).

Date of Start-up: 1986.

Date of Closure: The units are still in service.

Wastes Managed: The Sand Filters receive sanitary and industrial process effluent from the Clarifiers. An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The flow of wastewater is controlled at approximately 70 gallons per minute to prevent overfilling the Sand Filters. The Sand Filters are fully enclosed such that wastewater and filter media are not exposed to the indoor air. The filters are completely above-ground to offer visual inspection of the entire unit. The filters are underlain by a concrete floor slab.

History of Releases: No releases were noted in the file information. During the VSI, the exterior surface of the Sand Filters appeared to be in good condition. No stains or releases were observed on the units and the concrete floor of the building was clean, dry and free of cracks.

Conclusions: Soil/Groundwater: There is no potential for release to soil and groundwater because the unit is fully enclosed and above-ground. The containment integrity of the filters appeared to be good and there were no signs of deterioration of the underlying concrete pad.

Surface Water: The potential for direct releases from the Sand Filters to surface water is low. If a filter ruptured and leaked, wastewater would be collected outside the building in the catch basin. The wastewater would be released to the Great Miami River via the Retention Basins and the Overflow Pond. The release potential is minimized due to the apparent integrity of these metal units.

Air:	There is no potential for release to the air from these fully enclosed units.
Subsurface Gas:	There is no potential for generation of subsurface gas since the Sand Filters are located completely above-ground over a concrete floor slab.

Unit No.: SD-8

Unit Name: Chlorine Contact Chambers (4)

Unit Description: The Chlorine Contact Chambers are two outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The systems' design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Chlorine Contact Chambers are the final treatment units in the system. Each chamber is approximately three feet on a side and approximately 10 feet deep. The chambers are rectangular-shaped and open-topped. Chlorine is added to the wastewater as a disinfectant prior to discharge. Chlorinated effluent is discharged from the Chlorine Contact Chambers to the Great Miami River via NPDES Outfall 001 (Ref. 84).

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Chlorine Contact Chambers receive sanitary and industrial process effluent from the Sand Filters (SWMU SD-7). An analysis of the wastewater for hazardous constituents is not available. The sludge produced from treatment of the wastewater is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: The Chlorine Contact Chambers are constructed of concrete and two feet of freeboard was observed during the VSI. The ground surface around the chambers was uncovered. Treated wastewater enters the chambers at a constant rate from the Sand Filters and is discharged by gravity to NPDES Outfall 001, thereby maintaining a constant wastewater level in the units (Ref. 84).

History of Releases: No releases were noted in the file information. During the VSI, the upper portion of the concrete walls of the chamber appeared to be in good condition. The bottom of the unit could not be inspected since the unit was filled with wastewater.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is unknown since the concrete sides and bottom of the unit could not be inspected and their containment integrity could not be determined.

Surface Water: The potential for direct releases to surface water is moderate. If overtopping occurred the wastewater would probably follow the natural slope of the land to the Retention Basins or the Overflow Pond. This release potential is minimized due to the freeboard maintained in the chamber.

Air: The potential for release to the air is low due to the relatively dilute and inert nature of the wastewater. The potential for release to the air would be high if volatile constituents were present in the wastewater since the Chlorine Contact Chamber is open-topped.

Subsurface Gas: The potential for generation of subsurface gas is low since the unit is lined with concrete and the wastewater is relatively non-volatile.

14. Unit Information:

A. Unit Name: Wastewater Treatment Plant

Capacity: 130,000 gallons/day (Ref. 23, p. 3-8).

Period of Operation: Unknown

Waste Type: Sanitary and industrial wastes (Ref. 53). The sludge contains radionuclides, but does not have RCRA-listed hazardous waste or hazardous waste characteristics (Ref. 55, p. V-5).

Hazardous Constituents: Unknown

Regulatory Status: NPDES permitted

B. Unit Description: The Wastewater Treatment Plant process consists of a grit chamber, comminutor, four equalization basins, two aeration tanks, two clarifiers and chlorination facilities (Ref. 53). After processing, the sludge is dried and packaged for off-site disposal and the effluent is discharged through an enclosed pipeline to the Great Miami River. Effluent quality is monitored continually to document compliance with their NPDES permit (Ref. 23, p. 3-13). Sources of wastewater treated at the facility include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal-finishing operation. An average of 100,000 gallons per day of treated effluent is discharged to the Great Miami River via Outfall 601 under NPDES permit No. IT000005 (Ref. 73). The capacity of the plant is 130,000 gallons/day (Ref. 23, p. 3-8). Ref. 55 (p. V-8) states that sludge contains radionuclides but does not have RCRA-listed hazardous wastes or hazardous characteristics. This unit is also referred to as Sanitary Disposal (SD) (Ref. 83, p.1).

Additional Information Needed:

1. Period of operation
2. Unit dimensions
3. Unit capacities
4. Release controls
5. Hazardous constituents
6. Waste flow description
7. Waste analysis which supports contention that there are no hazardous constituents in the waste

3. SEWAGE DISPOSAL BUILDING AREA

3.1. SITE HISTORY

3.1.1. Description of Sewage Disposal Building Area

The Sewage Disposal Building area is located near Building 57, southwest of the Main Hill (Figures 1.3 and 3.1) (Kearney 1988). This area is located east of the retention basins. The sanitary wastewater treatment plant at the Sewage Disposal Building area is used for treatment of sanitary and process wastewater produced by the facility. Components of the sanitary wastewater treatment plant include the

- grit chamber,
- grit conveyer,
- comminutor,
- equalization basins,
- aeration basins,
- clarifiers,
- sand filters, and
- chlorine contact chambers.

Monitoring well 0137 is located downgradient of the Sewage Disposal Building area (Figure 3.1).

3.1.1.1. Grit Chamber

The grit chamber is the initial component of the sanitary wastewater treatment plant and is located outdoors. The grit chamber is an open-topped, in-ground tank approximately 10 ft on each side and 10 to 12 ft deep. The sides and bottom of the unit are constructed of 12-inch-thick concrete. Wastewater enters the chamber by gravity flow through a below-ground pipe. In the grit chamber, heavy solids, such as gravel, settle out of the wastewater and are raked into a grit conveyor. The collected solids are then dried in three sludge drying beds before they are transported to an offsite disposal area. Wastewater effluent is discharged from the grit chamber to the comminutor (Kearney 1988). The grit chamber is typically cleaned every day to increase system efficiency.

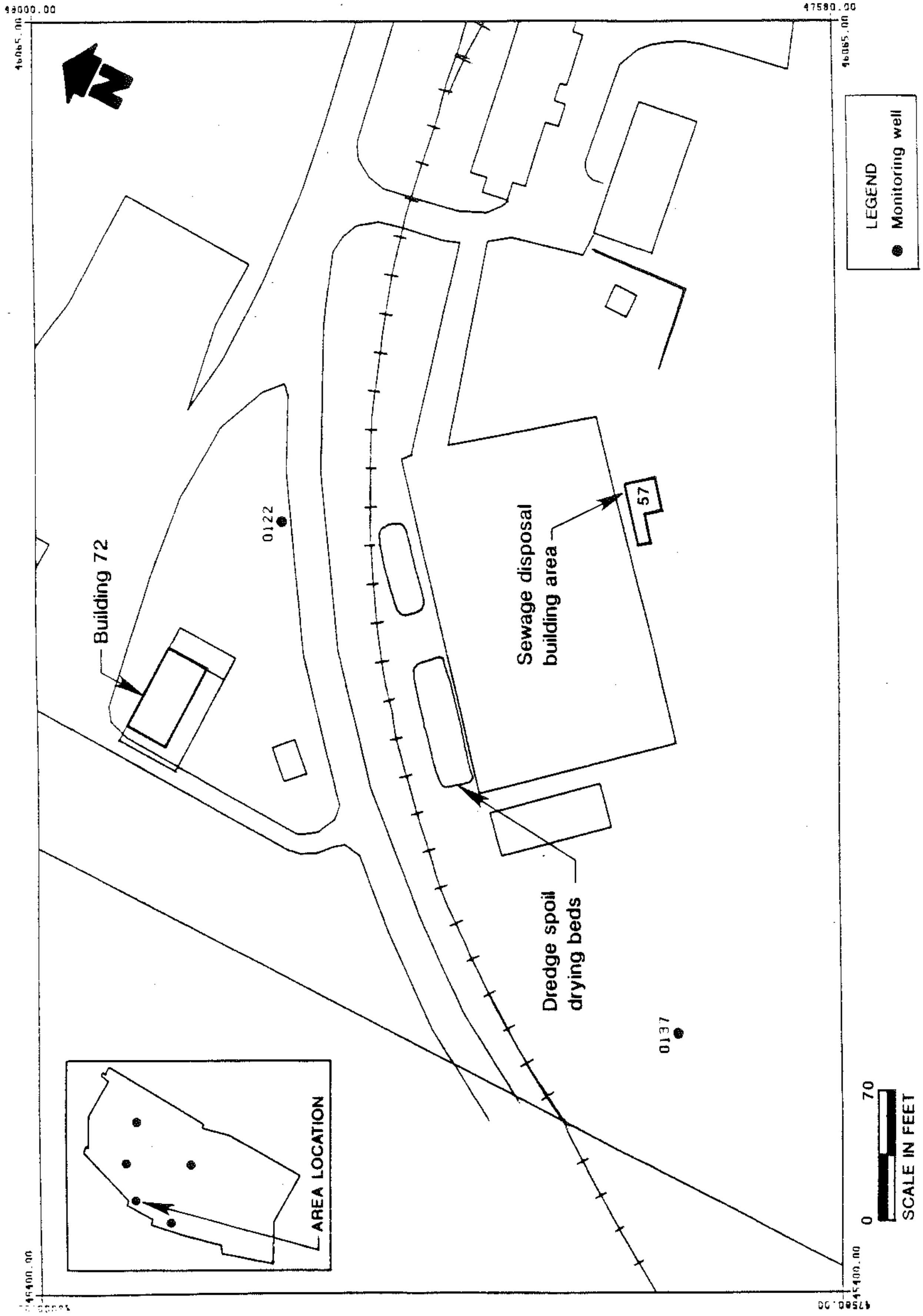


Figure 3.1. Sewage Disposal Building area.

3.1.1.2. Grit Conveyer

The grit conveyor is a screw conveyer that lifts settled solids out of the grit chamber so the solids can be transported and dumped into the sludge drying beds (Kearney 1988). The conveyer is surrounded by a metal cover and the unloading area is underlain by a concrete pad. The unit extends to the bottom of the grit chamber and conveys solids approximately 3 ft aboveground. The point of discharge is approximately 6 ft from the grit chamber.

3.1.1.3. Comminutor

The comminutor is an open-topped, in-ground unit that receives wastewater effluent from the grit chamber. The bottom and sides of the unit are lined with concrete. At the comminutor, the floating or suspended solids are cut up into smaller, more uniformly sized pieces to improve the efficiency of the downstream treatment operations. The comminutor is approximately 5 ft on each side and 10 ft deep. Treated effluent is discharged from the comminutor into the equalization basins.

- determine the integrity of sides & bottom. If leaks do subsurface soil sampling

3.1.1.4. Equalization Basins

The equalization basins are four outdoor components of the sanitary wastewater treatment system. The equalization basins are in-ground, open-topped units that receive wastewater from the comminutor. The sides and bottom of the basins are constructed of metal. The function of the equalization basins is to mix the wastewater to keep solids in suspension and to maintain aerobic conditions. Effluent is discharged from the equalization basins to the aeration basins.

Same thing

3.1.1.5. Aeration Basins

The aeration basins are two outdoor components of the sanitary wastewater treatment plant. The aeration basins are in-ground, open-topped units that receive effluent from the equalization basins. The bottom and sides of the basins are metal. Wastewater in the aeration basins is aerated to improve its treatability and to promote uniform distribution of suspended solids. The basins are approximately 40 ft long, 20 ft wide, and 10 ft deep. Aerated effluent from the basins is discharged into the clarifiers.

3.1.1.6. Clarifiers

The clarifiers are two outdoor components of the sanitary wastewater treatment plant. The clarifiers are in-ground, open-topped units that receive wastewater effluent from the aeration basins. The clarifiers are rectangular-shaped and have metal sides and bottoms. The clarifiers remove readily settleable solids and floating material to reduce the suspended solids content. The clarifiers are approximately 20 ft long, 10 ft wide, and 10 ft deep. Clarified effluent is discharged to the sand filters for additional treatment. Sludge produced in the clarifiers is removed and placed in the sludge drying beds (section 4).

3.1.1.7. Sand Filters

The sand filters are two indoor components of the sanitary wastewater treatment plant located in a small building west of the clarifiers. They are fully enclosed, cylindrical units, approximately 12 ft high and 4 ft in diameter. Wastewater is pumped through the bottom of the sand filter at an average rate of 70 gallons per minute and discharged through the top. The filters are aboveground and are constructed of metal. They reduce the suspended solids concentration in the wastewater effluent. Only one filter is operational at present. Filter effluent is discharged to the chlorine contact chambers before being discharged offsite.

3.1.1.8. Chlorine Contact Chambers

The chlorine contact chambers are outdoor components of the sanitary wastewater treatment plant. The four chambers are the final treatment units in the system. Each chamber is approximately 3 ft on a side and approximately 10 ft deep. The chambers are rectangular-shaped and open-topped. Chlorine is added to the wastewater as a disinfectant before discharge. Chlorinated effluent is discharged from the chlorine contact chambers to the Great Miami River by way of National Pollution Discharge Elimination System (NPDES) Outfall 001.

3.1.2. <u>Potential Sewage Disposal Building Area Contaminants</u>

Sources of wastewater for the components of the sanitary wastewater treatment plant include rest rooms, showers, laundry facilities, lab sinks, floor drains, and rinse from a small metal-refinishing system (Kearney 1988). The metal-finishing system is NPDES-permitted (permit number 1C). The components are also in contact with the wastewater and sludge during treatment. The sludge produced and placed in the sludge drying beds (section 4) is reported to contain radionuclides, but it does not constitute a RCRA-listed hazardous waste nor does it have hazardous waste characteristics (Kearney 1988). The sludge is packaged and shipped to the Nevada Test Site as a low-level radioactive waste.

Does it pass the TCLP? waste analysis?

3.2. EXISTING SITUATION

3.2.1. <u>Water Sample Analytical Results, Sewage Disposal Building Area Contaminants</u>

Monitoring well 0137 is located downgradient of the Sewage Disposal Building area. Water samples from this well have been analyzed for TCL VOCs. The hazardous constituents detected in samples from this well are given in Table III.1. Only the TCL analytes present above the detection limit are given. Elevated levels of contaminants could be derived, in part or wholly, from other potentially contaminated areas close to the Sewage Disposal Building area.

3.3. FIELD INVESTIGATION

3.3.1. <u>Sampling Objectives and End Use of Data</u>

The wastewater and sludge pass through the components of the Sewage Disposal Building area before discharge to NPDES outfall 001 or to the sludge drying beds (section 4). Because the residence time in the sewage disposal components is relatively short, sampling at the final point of sludge deposition and accumulation, the sludge drying beds, will provide data concerning the potential hazardous contaminants exiting the system. In addition, all the sewage disposal components described in section 3.1.1 include either concrete or metal linings; whereas, the bottom of the sludge drying beds is gravel. Therefore, unless the integrity of the sewage disposal components has been compromised, potential contaminants would be detected in the soils/sediments of the sludge drying beds (section 4), not in the Sewage Disposal Building area. Sampling at or near the components of the sewage disposal system will only be performed if a visual integrity check reveals cracks or leaks in the component at or near the surface. Air samples will be collected near the aeration basins, as described in section 3.3.2.

The data obtained from this investigation at the Sewage Disposal Building area may be used to

- establish that the components of the sewage disposal system are intact with no evidence of cracks or leaks,
- identify sections within the Sewage Disposal Building area that require additional investigation, or
- establish and identify airborne releases of VOCs or semivolatile organics from the aeration basins.

3.3.2. <u>Sampling Locations</u>

Discrete soil or sediment samples will be collected at locations where cracks or leaks are observed.

Three air emission samples will be collected downwind of the aeration basin component of the wastewater treatment plant; one air sample will be collected upwind of the basin.

It is assumed that

- air samples collected downwind of the aeration basin are representative of air in the basin,

Table III.1. Monitoring Well 0137 Analytical Results

Date	Contaminant	Concentration ($\mu g/L$)	MCL ($\mu g/L$)	MCLG ($\mu g/L$)
March 1988	1,2-*trans*-dichloroethene	16.0	70[a]	NE
	1,2-dichloroethane[b]	11.0	5	0
May 1988	1,2-*trans*-dichloroethene	13.0	70[a]	NE
March 1988	styrene[b]	6.0	5	0

Note: MW-0137 analyzed for VOCs
[a]Proposed MCL or MCLG (SDWA 1988)
[b]Measured concentration meets or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

what was analyzed for?

- the air sample collected upwind of the aeration basin is a background air sample, and
- air samples will be collected over a period of time, providing for the integration of all possible emissions collected at the sampling location.

Collection of air samples is meant to determine the existence of gross contamination. Integration over time of collected samples will smooth out irregularities due to local meteorological variations.

3.3.3. Sampling Activities

Table III.2 presents the sampling specifications for sediment samples (if collected) and air samples that will be collected at the Sewage Disposal Building area.

3.3.4. Sample Collection Protocol

why only 0 to .5 feet?. .5 feet won't show voc's. to cracks should look deeper.

If soil or sediment samples are collected at the sanitary wastewater treatment plant, they will be single surface samples at 0 to 0.5 ft. Each sample will be collected with a stainless steel spoon. The samples will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and HMX, RDX, and PETN explosives. A total of 1,350 mL is required for each sample:

- 60 mL of sediment in an amber glass container for TCL VOCs;
- 500 mL of sediment in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;
- 250 mL of sediment in an amber glass container for HMX, RDX, and PETN explosives;
- 500 mL of sediment in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL of sediment in a glass vial for screening by the analytical laboratory.

The 60 mL of soil necessary for TCL VOCs analysis will be immediately collected and containerized, followed by the collection and containerizing of the 1,290 mL of soil necessary for the remaining analyses.

Air Samples

The air samples collected at the aeration basin component of the wastewater treatment plant will be single samples collected over a designated period of time at predetermined locations. The air samples will be collected according to EPA method TO-14, "Determination of Volatile Organic Compounds (VOCs) in Ambient Air Using SUMMA Passivated Cannister Sampling and Gas Chromatography (GC) Analysis" (EPA 1984). Each sample will be analyzed for volatile and semivolatile organic compounds.

Table III.2. Sampling Specifications for the Sewage Disposal Building Area Sediment

Environmental Samples

Sediment Samples[a]

why so shallow?

Number: To be determined in the field
Depth: Surface 0 to 6 inches
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and RDX, PETN, and HMX explosives

Environmental Samples

Air Samples[b]

Number: 4
Depth: Surface (air samples will be collected at the aeration basin component of the wastewater treatment plant)
Analytical Parameters: TCL VOCs and semivolatile organics

Field Quality Control Samples

Trip Blanks

Number: 1 per shipping container for air, and 1 per shipping container for sediments (if sediment samples are collected)
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1 for sediments (if sediment samples are taken)
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and RDX, PETN, and HMX explosives

Decontamination Water

Number: 1 for sediments (if sediment samples are collected)
Analytical Parameters: TCL VOCs

Field Blanks

Number: 1 for air
Analytical Parameters: TCL VOCs

Field Duplicate

Number: 1 for air
Analytical Parameters: TCL VOCs

---

[a]Sediment samples at the sanitary wastewater treatment plant will be collected according to ER Program SOP 5.2, Sampling with a Spade and Scoop (revision 2) (DOE 1988). Each sample will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]Air samples at the aeration basin of the sanitary wastewater treatment plant will be collected according to EPA Method TO-14, "Determination of Volatile Organic Compounds (VOCs) in Ambient Air Using SUMMA Passivated Cannister Sampling and Gas Chromatography (GC) Analysis" (EPA 1984).

65. Unit Information:

A. Unit Name: Sludge Drying Beds

Period of Operation: Unknown

Waste Type: Wastewater treatment plant sludge and low level radioactive waste

Hazardous Constituents: Heavy metals including silver and cadmium, organic solvents including acetone and methylene chloride (Ref. 73, p. 3-63).

Regulatory Status: Unknown

B. Unit Description: The wastewater treatment plant sludge is deposited in the Sludge Drying Beds and then packaged in boxes for disposal as a low level radiological waste at the Nevada Test Site. The boxes are sampled for radiological analyses. The Nevada Test Site does not have approval for disposal of radioactive mixed waste and requested that these sludge shipments be discontinued (Ref. 73, p. 3-63). The beds are located adjacent to the Wastewater Treatment Plant.

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Materials of construction
4. Release controls
5. Method of sludge conveyance
6. Current method of dried sludge disposal

Unit No.: SD-9

Unit Name: Sludge Drying Beds (4)

Unit Description: The Sludge Drying Beds represent four outdoor components of the Sanitary Wastewater Treatment System located east of the Retention Basins (SWMU SI-1). The treatment system is utilized for treatment of sanitary and process wastewater produced by the facility. Treated effluent from the Sanitary Wastewater Treatment System is monitored continuously to document compliance with NPDES Permit No. IT000005 before it is discharged through Outfall 001 to the Great Miami River (Ref. 23, p. 3-13). An average of 100,000 gallons of wastewater is treated per day by the system. The system's design capacity is 130,000 gallons per day (Ref. 23, p. 3-8).

The Sludge Drying Beds receive sludge from the Grit Chamber (SWMU SD-1) and Clarifiers (SWMU SD-6). Each unit is approximately 40 feet long, 20 feet wide and three or four feet deep. The sides are constructed of six-inch thick concrete and the bottom is composed of gravel fill. The bottom is underlain with underdrains which direct the liquid from the sludge back into the treatment system. The sludge is placed in the beds and allowed to dry in the sun. Dried sludge is removed and disposed off-site (Ref. 84).

During the VSI, three of the beds contained sludge and one was empty.

Date of Start-up: 1975 (Ref. 84).

Date of Closure: The units are still in service.

Wastes Managed: The Sludge Drying Beds receive sanitary and industrial process wastewater sludge from the Grit Chamber and Clarifiers. The

W

sludge is known to contain radionuclides but it does not constitute a RCRA-hazardous waste nor does it have hazardous waste characteristics. It has not been analyzed for hazardous constituents. The sludge is packaged for shipment as a low-level radioactive waste to the Nevada Test Site. Sources of wastewater treated by all units in the Sanitary Wastewater Treatment System include restrooms, showers, laundry facilities, lab sinks, and rinses from a small metal finishing operation (Ref. 73).

It is reported that some lab sinks receive small quantities of solvents, photographic solution, and acids and bases. Therefore, the sludge may also contain heavy metals such as silver and cadmium and organic solvents such as acetone and methylene chlorine (Ref. 81, p. 4-13).

Release Controls: Concrete sidewalls confine the sludge to the beds. Underdrains collect excess liquids and return it back to the treatment system. Freeboard on the three Sludge Drying Beds in service during the VSI was approximately two feet. The ground surface around the Sludge Drying Beds is covered with asphalt which is sloped to the west toward a storm catch basin. From this collection point, runoff and releases from the beds would be discharged to the Retention Basins (SWMU SI-1) or Overflow Pond (SWMU SI-2).

History of Releases: Sludge from the treatment system is placed in the drying beds on bare soil over an underdrain system. The extent of any contamination in the soil is not known. No releases over the sidewalls of the beds were observed during the VSI.

Conclusions:

Soil/Groundwater: Sludge is placed directly on the ground surface in the beds. There is a moderate to high potential for contaminants in the sludge to travel with infiltrating liquid to the groundwater. The potential may be minimized due to the presence of the underdrain system; however, the efficiency of liquid collection was not determined.

Surface Water: There is a low to moderate potential for release to surface water since the surrounding asphalt is sloped to a storm drain. The ability of the units' underdrain system to handle large volumes of rainfall is not known.

<u>Air</u>:	The potential for volatile releases to the air is low. Although the unit is open-topped and sludge is exposed to the atmosphere any volatile constituents present in the wastewater are likely to be released during treatment at the Equalization Basins and Aeration Basins. There is a moderate potential for release of airborne particulates since the dried wastes are subject to wind dispersion.
<u>Surface Gas</u>:	There is a moderate to low potential for generation of subsurface gas since any volatile constituents present in the wastewater are likely to be released during treatment at the Equalization Basins or Aeration Basins.

4. SLUDGE DRYING BEDS

4.1. SITE HISTORY

4.1.1. Description of Sludge Drying Beds

The sludge drying beds are located near Building 57 in the southwest portion of Mound Plant, west of the Sewage Disposal Building area (section 3; Figures 1.3 and 4.1). The four sludge drying beds are components of the sanitary wastewater treatment system, which is used for treating sanitary and process wastewater produced by the facility.

The four sludge drying beds receive sludge from the grit chamber and clarifiers (sections 3.1.1.1 and 3.1.1.6) where it is allowed to dry in the open air. Two of the units are currently empty. Each unit is approximately 40 ft long, 20 ft wide, and 4 to 6 ft deep. The sides are constructed of 6-inch-thick concrete and the bottom consists of gravel fill. The bottom is underlain with drains that direct the liquid from the sludge back into the treatment system. Dried sludge is regularly removed and shipped to the Nevada Test Site for disposal as low-level radioactive waste. Monitoring well 0137 is located downgradient of the sludge drying beds and the sewage disposal area (section 3 and Figure 4.1). The beds contain approximately 5 ft of sludge.

results of an analysis? what was analyzed for? Kearney report doesn't give any details.

4.1.2. Potential Sludge Drying Beds Contaminants

The sludge is known to contain radionuclides, but it does not constitute an RCRA hazardous waste nor does it have hazardous waste characteristics (Kearney 1988). However, the sludge has not been sampled for all hazardous constituents on the TCL. It is possible that solvents or other hazardous constituents used in onsite laboratories have been deposited in the sludge drying beds. Sources of wastewater treated by all units in the sanitary wastewater treatment system include rest rooms, showers, laundry facilities, lab sinks, and rinses from a small metal-refinishing operation. Sludge drying beds were sampled in September 1987 by Mound Plant, as required by the waste disposal facility. Analytical results will be evaluated as soon as they are available.

why aren't they available?

4.2. EXISTING SITUATION

4.2.1. Water Sample Analytical Results, Sludge Drying Beds

Water sample analytical results for monitoring well 0137 are given in Table IV.1. Samples have been analyzed for TCL VOCs. Only the analytes present above the detection limit are given. Elevated levels of

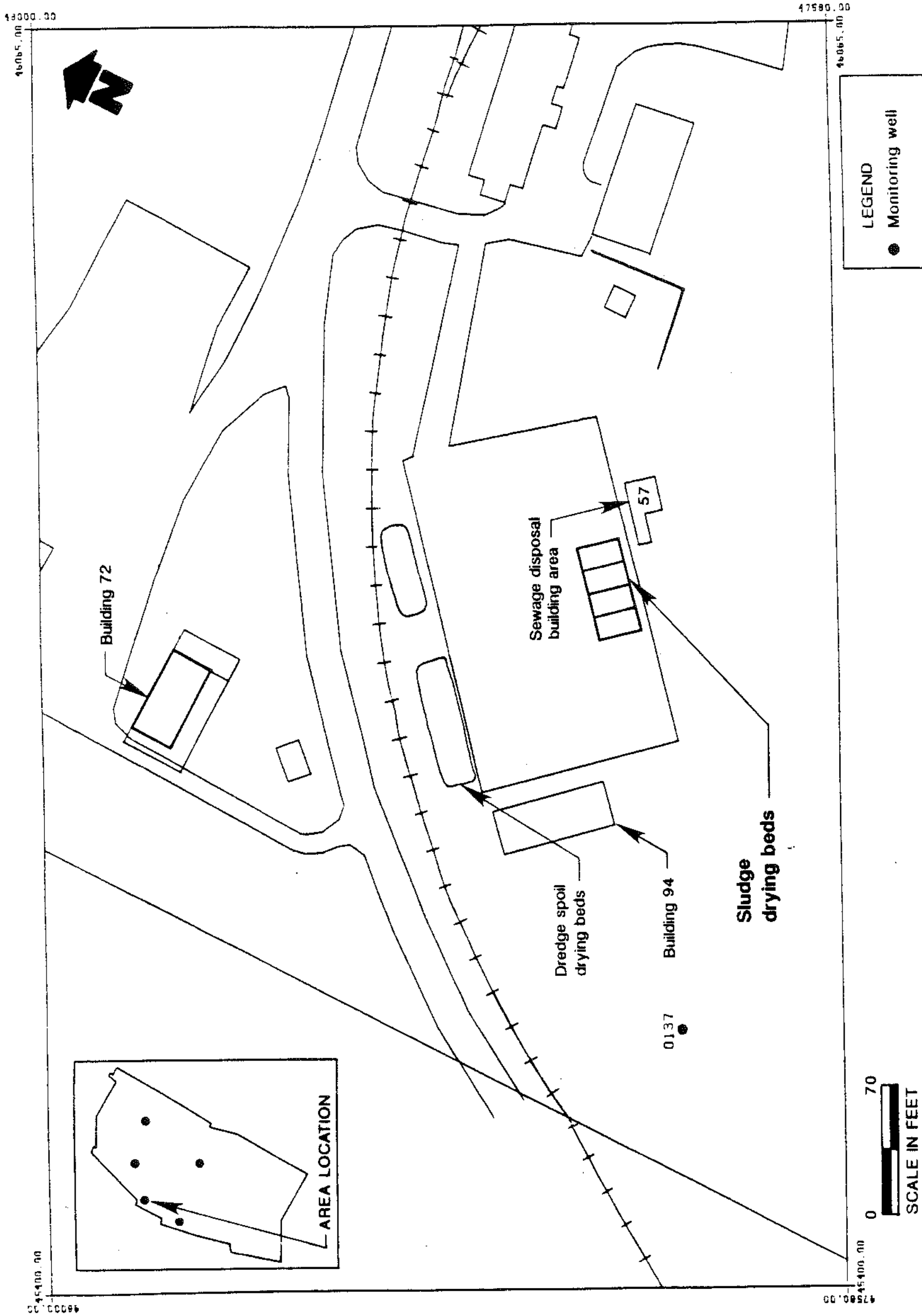


Figure 4.1. Sludge drying beds.

Table IV.1. Monitoring Well 0137 Analytical Results

Date	Contaminant	Concentration ($\mu g/L$)	MCL ($\mu g/L$)	MCLG ($\mu g/L$)
March 1988	1,2-*trans*-dichloroethene	16.0	70[a]	NE
	1,2-dichloroethane[b]	11.0	5	0
May 1988	1,2-*trans*-dichloroethene	13.0	70[a]	NE
March 1988	styrene[b]	6.0	5	0

Note: MW-0137 analyzed for VOCs
[a]Proposed MCL or MCLG (SDWA 1988)
[b]Measured concentration meets or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

- were the metals ~~and~~ cadmium, silver, organic solv.: acetone & methylene chloride)

- take some soil samples of the area downgradient from the beds.

contaminants could be derived, at least in part, from other potentially contaminated areas close to the sludge drying beds.

4.3. FIELD INVESTIGATION

for what?

The sediments from the sludge drying beds have recently been sampled and analyzed. The data from these analyses will be included in a report on this limited field investigation and used for project scoping.

5. DREDGE SPOIL DRYING BEDS

5.1. SITE HISTORY

5.1.1. Description of Dredge Spoil Drying Beds

The dredge spoil drying beds are located east of Building 94, near the sludge drying beds and the Sewage Disposal Building area (section 3; Figures 1.3 and 5.1). The beds are located near the west end of the sanitary wastewater treatment system. Dredge spoil from the asphalt-lined pond (section 6) was stored and dried in the beds before it was packaged for offsite disposal, and the remaining capacity of the beds was filled with material from the sludge drying beds (section 4). The dredge spoil drying beds now in use receive sludge from the sanitary wastewater treatment system (see section 3). Monitoring well 0137 is located downgradient of the beds (Figure 5.1).

The dredge spoil drying beds are open-topped, wooden structures approximately 6 to 8 ft wide and 3 ft deep. The beds in use are lined with plastic and are positioned on asphalt. Three units are currently in use at the location shown on Figure 5.1. An additional 56 beds are stacked in the adjacent parking lot and are full and closed.

5.1.2. Potential Dredge Spoil Drying Beds Contaminants

Plutonium-contaminated dredged material from the asphalt-lined pond was once placed in the beds. This material was removed and shipped to the Nevada Test Site for disposal. The three units still in operation receive sewage sludge (Kearney 1988). The soil under the dredge spoil drying beds has not been analyzed for hazardous constituents.

5.2. EXISTING SITUATION

5.2.1. Water Sample Analytical Results, Dredge Spoil Drying Beds

Water samples from monitoring well 0137 have been analyzed for TCL VOCs. The analytes detected in samples from this well are given in Table V.1. Only the contaminants present above the detection limit are given. Elevated levels of contaminants could also be derived from other potentially contaminated areas close to the dredge spoil drying beds.

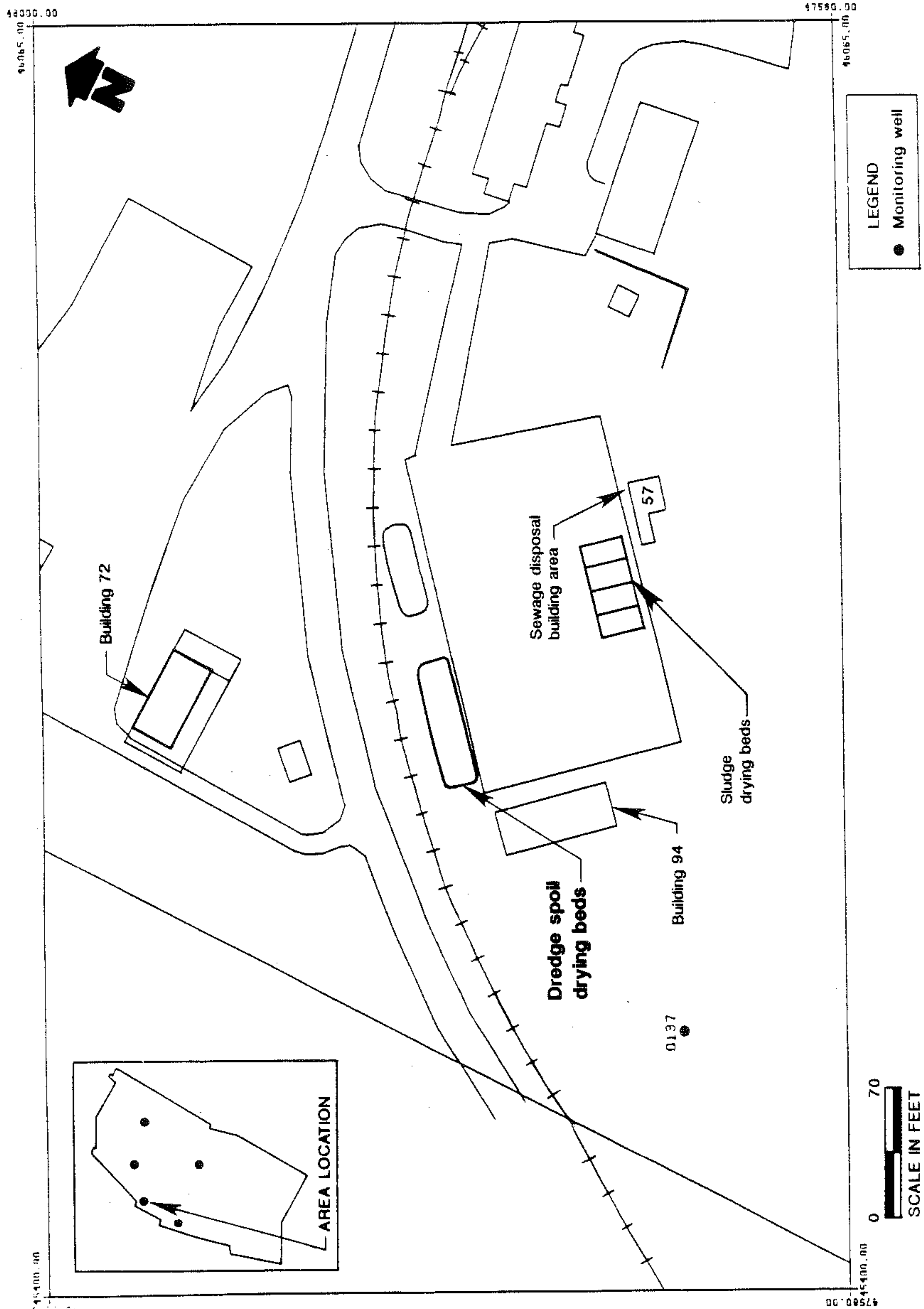


Figure 5.1. Dredge spoil drying beds.

Table V.1. Monitoring Well 0137 Analytical Results

Date	Contaminant	Concentration (μg/L)	MCL (μg/L)	MCLG (μg/L)
March 1988	1,2-*trans*-dichloroethene	16.0	70[a]	NE
	1,2-dichloroethane[b]	11.0	5	0
May 1988	1,2-*trans*-dichloroethene	13.0	70[a]	NE
March 1988	styrene[b]	6.0	5	0

Note: MW-0137 analyzed for VOCs
[a]Proposed MCL or MCLG (SDWA 1988)
[b]Measured concentration meets or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

5.3. FIELD INVESTIGATION

5.3.1. Sampling Objectives and End Use Of Data

The objective of sampling the soil beneath the dredge spoil drying beds is to identify any releases of hazardous constituents to the soil. If hazardous constituents are present in any of the samples from this limited field investigation, a more extensive remedial investigation may be performed.

5.3.2. Sampling Locations

Two surface soil samples may be collected below the asphalt at those dredge spoil drying beds in the area where they were used for dredge spoil drying. The exact locations will be chosen at the start of field activities. Samples will be taken where stained or discolored soil is observed or where field instruments indicate readings which are elevated above background. If no stains are present, two separate soil samples will be collected from areas which water from dredge spoils may have leaked onto.

which field instruments?

(in addition or just alone?

5.3.3. Sampling Activities

Table V.2 presents the sampling specifications for the dredge spoil drying beds.

5.3.4. Soil Sample Collection Protocol

The surface (0 to 6 inches) soil samples that may be collected at each of the biased sampling locations at the dredge spoil drying beds will be single samples. The samples will be collected according to ER Program SOP 5.2, Sampling with a Spade and Scoop (revision 2) (DOE 1988). Each sample will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides. A maximum of two soil samples will be collected. A total of 1,100 mL is required for each sample:

- 60 mL of soil in an amber glass container for TCL VOCs;
- 500 mL of soil in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;
- 500 mL of soil will be placed in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL of soil in a glass vial for screening by the analytical laboratory.

The 60 mL of soil necessary for the VOCs analysis will be immediately collected and containerized, followed by the collection and containerizing of the 1,040 mL of soil necessary for the remaining analyses.

Table V.2. Sampling Specifications for the Dredge Spoil Drying Bed

Environmental Samples

Surface Soil Samples[a]

Number: 2
Depth: 0 to 6 inches
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides

Field Quality Control Samples

Trip Blanks

Number: 1 per shipping container containing samples to be analyzed for TCL VOCs
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides

Ambient Blanks

Number: 1
Analytical Parameters: TCL VOCs

Field Duplicates[b]

Number: 1 surface soil sample
Analytical Parameters: TCL/TAL semivolatile organics, metals, and PCBs/pesticides

---

[a]The surface soil samples will be collected according to ER Program SOP 5.2, Soil Sampling with Spade and Scoop (revision 2) (DOE 1988). If the materials are too hard, a sample will be collected using a Hand Auger as per the ER Program SOP 5.3, Subsurface Solid Sampling with a Hand Auger and Thin-Walled Sampler (revision 2) (DOE 1988). The samples will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]A field duplicate will be collected from a surface soil sample at a single location. The portion of the sample (60 mL) needed for VOCs analysis will be removed first. The remainder of the sample will be analyzed for TCL/TAL semivolatile organics, metals, PCBs/pesticides, and cyanide. For this sample only, a total of 1,600 mL of soil is needed from the soil sample, which will be split to form the field duplicate.

No field quality control samples will be collected. The quality control data obtained during sampling at the sludge drying beds will also be sufficient for this area.

A total of two subsurface soil samples will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and hexavalent chromium. The field duplicate will be analyzed for the same parameters as the original sample, with the omission of TCL VOCs.

24. Unit Information:

A. Unit Name: Asphalt-Lined Pond

Period of Operation: Unknown, but dredged in 1983.

Waste Type: Stormwater run-off and non-contact single-pass cooling water.

Hazardous Constituents: Dredged materials reportedly contained low-level radioactive runoff.

Regulatory Status: Unknown

B. Unit Description: The pond is an asphalt-lined impoundment, located between Main Hill and SM Hill. The pond collects run-off from SM Hill and non-contact single-pass cooling water (Ref. 55).

Additional Information Needed:

1. Dates of operation
2. Analysis of pond liquids and sludges
3. Results of liner integrity inspections and tests (if any)
4. Dimensions
5. Hazardous constituents in SM Hill runoff
6. Source of radioactive runoff

Unit No.:	SI-3
Unit Name:	Asphalt-Lined Pond
Unit Description:	The Asphalt-Lined Pond is an open-topped impoundment located near Building 61 in the northeast corner of the Mound facility. Its dimensions are approximately 150 feet by 150 feet and 10 to 12 feet deep. Its capacity is 1.5 million gallons (Ref. 84). The pond receives non-contact cooling water and stormwater runoff from the hillside slope west of the SM Building (Ref. 55). The pond provides temporary storage, flow equalization, and retention time for removing suspended solids before discharging the effluent to the Retention Basins (SWMU SI-1) through the Plant Drainage Ditch (SWMU MI-1). Wastewater flows by gravity into and out of the pond. The pond bottom was dredged once in 1983 (Ref. 55).
Date of Start-up:	Late 1970s (Ref. 84).
Date of Closure:	The Asphalt-Lined Pond is still in service.
Wastes Managed:	The pond receives non-contact cooling water and runoff from the hillside slope west of the SM Building. The dredged material was found to contain low level radioactivity (Ref. 55). The wastewater or sludge has not been analyzed for hazardous constituents.
Release Controls:	The pond's sides and bottom are lined with a layer of asphalt. The thickness or permeability of this liner are not known. Cracks were noted in the exposed sides of the asphalt liner and vegetation was observed growing in the northern end of the pond during the VSI. Approximately five feet of freeboard is maintained by a gravity fed discharge outlet at the south end of the pond. A concrete spillway, also at the south end of the pond, allows emergency discharge of pond contents to the Plant Drainage Ditch (Ref. 84).
History of Releases:	There are no releases other than to the Plant Drainage Ditch reported in the file information or observed during the VSI. The integrity of the pond liner is not known; however, cracks in the sides and vegetation growing out of the bottom indicate the liner is not fully intact. In addition, desiccated silt residue was observed on the

concrete spillway. Facility representatives indicated the silt was deposited from runoff from the hillside and not as a result of a pond overflow (Ref. 84).

Conclusions: Soil/Groundwater: If hazardous constituents are present in the runoff from the hillside slope, there is a high potential for release to the soil beneath the pond through cracks in the asphalt liner.

Surface Water: The Asphalt-Lined Pond is part of the Wastewater Treatment System permitted under NPDES, and discharges via the Plant Drainage Ditch and Retention Basins to the Great Miami River. The potential for a release to surface water is moderate since no treatment for removal of chemical constituents is provided at the pond or downstream units prior to discharge to the Miami-Erie Canal and Great Miami River. There is no potential for surface water inundation since the Asphalt-Lined Pond is located above the 100-year floodplain of the Great Miami River.

Air: Although the pond is open-topped, the potential for releases to the air is low due to the relatively inert and dilute nature of the impounded liquid.

Subsurface Gas: The potential for generation of subsurface gas is low due to the inert nature of the impounded liquid.

6. ASPHALT-LINED POND

6.1. SITE HISTORY

6.1.1. Description of Asphalt-Lined Pond

The asphalt-lined pond is an open impoundment located west of Building 61, between the Main and SM/PP Hills of Mound Plant (Figures 1.3 and 6.1). Its dimensions are approximately 150 ft by 150 ft; it is 10 to 12 ft deep and has a capacity of 1.5 million gallons. The pond receives noncontact cooling water and stormwater runoff from the hillside slope northwest of the SM Building. The pond provides temporary storage, flow equalization, and retention time for removing suspended solids before discharging the effluent to the plant drainage ditch and on to the retention basins (section 7). Wastewater flows by gravity into and out of the pond, which was dredged once in 1983 (Kearney 1988). Monitoring well 111 is located downgradient of the pond (Figure 6.1).

no HW

6.1.2. Potential Asphalt-Lined Pond Contaminants

The pond receives noncontact cooling water and runoff from the hillside slope of the SM Building (Figure 6.1). The dredged material was found to contain low-level radioactivity (Kearney 1988). The wastewater and sludge has been analyzed for hazardous constituents. Table VI.1 summarizes the analytical results from sediment and water samples collected in 1987 from the asphalt-lined pond. The results of sediment and water analyses from the asphalt-lined pond, retention basins, and the overflow pond are given in Appendix A.

what is sludge analysis?

6.2. EXISTING SITUATION

Water and sediment samples collected from the asphalt-lined pond were found to contain low-level radioactivity (Appendix A; IT 1987; Kearney 1988). Currently, the pond is used to collect cooling water and runoff from the hillside slope of the SM Building.

Water sampling was performed with a precleaned, stainless steel zone sampler. The asphalt-lined pond was divided into four quadrants; a composite water sample was collected at the midpoint of each quadrant and at the center of the pond (IT 1987). The portion of the water sample needed for VOCs analysis was collected first, to minimize volatilization.

A 10-ft-long, precleaned, one-inch-diameter PVC pipe was used to collect the sediment cores, or plugs, at each location in the asphalt pond. Four sediment plugs were collected from the center of each quadrant;

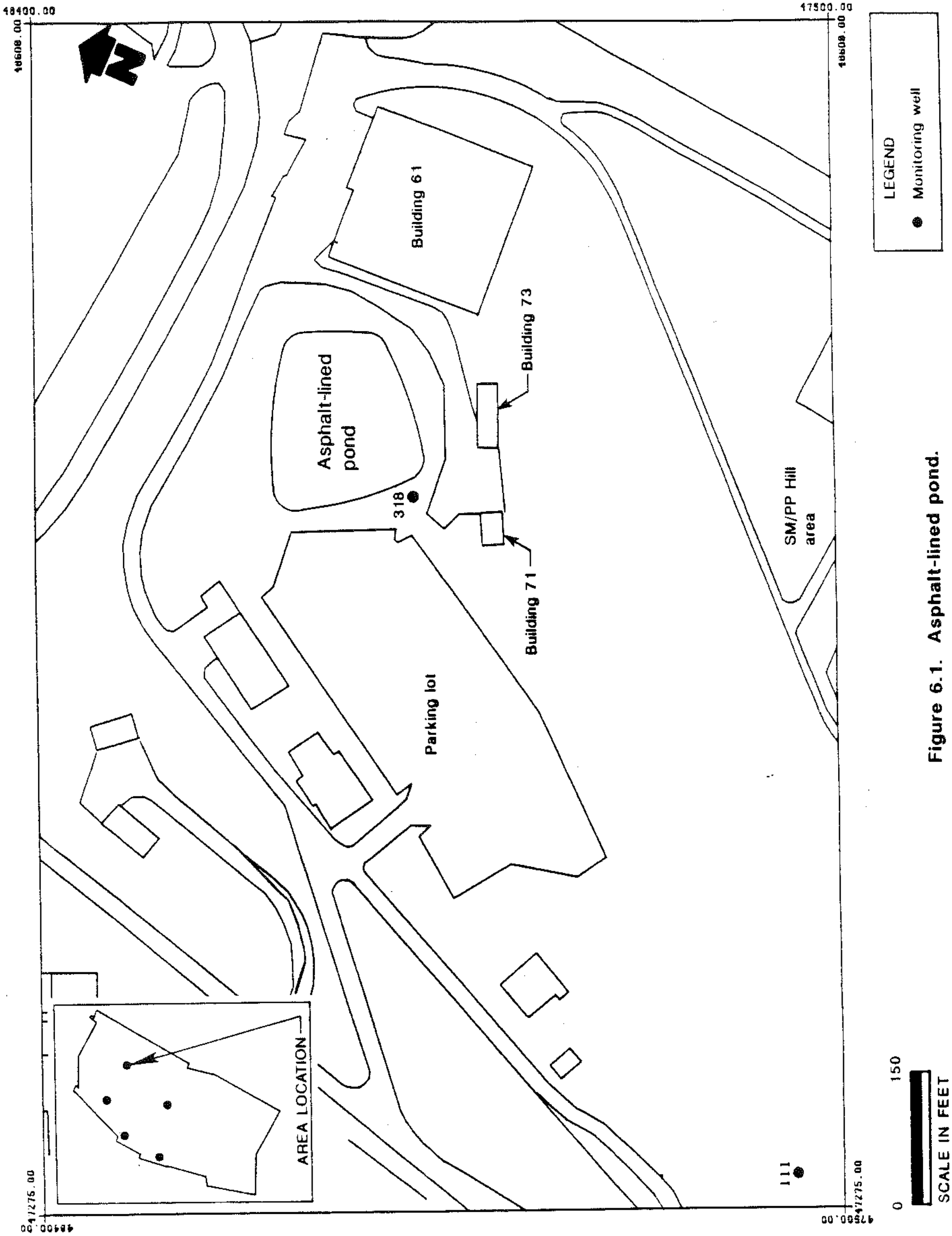


Figure 6.1. Asphalt-lined pond.

Table VI.1. Water and Sediment Sample Analytical Results for the Asphalt-Lined Pond

Analyte	Matrix	Concentration
Gross alpha	Water	0.01 pCi/mL
	Sediment	259 pCi/g
Gross beta	Water	0.02 pCi/mL
	Sediment	29 pCi/mL
Plutonium-238	Water	0.018 pCi/mL
	Sediment	160.1 pCi/g
Barium (EP Toxicity)	Water	0.016 mg/L
	Sediments	0.40 mg/L

Is this all that was analyzed?

four plugs were also collected from the center of the pond (IT 1987). These 20 plugs were composited into one sample and containerized.

Quality control samples were collected in conjunction with the water and sediment samples. The samples included a distilled water trip blank, a distilled water equipment rinsate (or field blank), and a sludge sample split (or field duplicate).

Quantitative results for the radiological and chemical analyses from all samples collected at the asphalt-lined pond, retention basin, and overflow pond are presented in Appendix A. Barium was found in the asphalt-lined pond water and sediment samples in concentrations of 0.016 mg/L and 0.40 mg/L, respectively (Table VI.1). These levels are below the MCL level of 1.0 mg/L for groundwater and the EP Toxicity level of 100 mg/L.

6.2.1. Water Sample Analytical Results, Asphalt-Lined Pond

Samples from monitoring well 111 have been analyzed for TCL VOCs, semivolatile organics, metals, and pesticides/PCBs. The only analyte detected above the detection limits is 6 μg/L of total xylenes detected in June 1988. The MCL for xylene is 10,000 μg/L. Area 7 of the Radioactively Contaminated Soil Operable Unit is also upgradient of monitoring well 111 (DOE 1989c).

6.3. FIELD INVESTIGATION

The sediments of the asphalt-lined pond have been investigated (IT 1987); therefore, no further environmental sampling of the pond will be carried out in this limited field investigation. A monitoring well will be installed adjacent to and downgradient of the pond as part of the Miscellaneous Sites Operable Unit (Figure 6.1) (DOE 1989b). This monitoring well will serve to monitor groundwater downgradient of both the pond and Building 61, which is being addressed in the Miscellaneous Sites Operable Unit (DOE 1989b).

12. Unit Information:

A. Unit Name: Retaining/Settling Basins
Period of Operation: Unknown

Waste Type: Wastewater (1,000 gallons/year) containing small amounts (ppm range, grams per year) of dissolved explosives and acetone (4 m^3/yr)(Ref. 23).
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The basins are utilized for biodegradation of the explosive constituents and evaporation of the acetone (Ref. 23). According to Ref. 55, "the wastes were piped to concrete-lined filtering basins" then to an "open retaining/settling basin or a leach bed for biodegradation treatment." Two areas (labelled I in Ref. 55 and 69) represent the locations of these units on the western portion of the facility. The concrete-lined basins were dredged every 3 or 4 years. The sludge materials and filters were destroyed by thermal treatment.

Additional Information Needed:

1. Number of basins
2. Regulatory status
3. Closure status
4. Dimensions
5. Capacity
6. Period of operation
7. Release controls
8. Disposition of dredged sludges and filters

Unit No.:	SI-1
Unit Name:	Retention Basins (3)
Unit Description:	The Retention Basins are open-topped impoundments located just north of the Overflow Pond (SWMU SI-2) near the southwest corner of the DOE's northern property. On-site rainfall runoff and non-contact cooling water are diverted into the Retention Basins by way of the Plant Drainage Ditch (SWMU MI-1). The Retention Basins are separated by concrete walls and have earthen sides and bottoms (Ref. 84). The basins' function is to regulate the rate of discharge of facility stormwater to the Miami-Erie Canal and Great Miami River and to provide settling for suspended matter in the runoff (Ref. 55). Retention Basin effluent is discharged through a standpipe in the westernmost basin to the Great Miami River through NPDES Outfall 002 and the Miami-Erie Canal (Ref. 46). Excess runoff is diverted from the Retention Basins to the Overflow Pond (Ref. 84). Water from the Plant Drainage Ditch flows into the basin in the northernmost corner which discharges to the south pond and finally to the west basin where the effluent is discharged (Ref. 84). Dredged materials removed from the basins in the past were reportedly deposited in the Hillside Disposal Area (Ref. 55).
Date of Start-Up:	Unknown.
Date of Closure:	The Retention Basins are still active.
Wastes Managed:	The basins receive approximately 410,000 gallons per day of single pass cooling water, cooling tower blowdown, and water softener backwash. Stormwater runoff is also directed into the Retention Basins via the Plant Drainage Ditch. The basins received wastewater containing radioactive particles as a result of the Waste Disposal Pipeline (SWMU MI-2) break in 1969. The wastewater or sludge in the basins has not been analyzed for hazardous constituents.
Release Controls:	The liquid level in the basins is controlled by the standpipe in the west basin which discharges basin effluent to NPDES Outfall 002. The pipe maintains approximately two feet of freeboard on the

basins. Also, during times of excess rainfall or when the Plant Drainage Ditch effluent carries a high suspended solids load, the wastewater stream is diverted to the 5,000,000 gallon Overflow Pond for storage and clarification. In the event the Retention Basins fill to capacity, excess wastewater will discharge over a concrete spillway to NPDES Outfall 002.

History of Releases: There were no unintended releases reported from the basins in the file information or observed during the VSI. During the VSI, Drainage Ditch effluent was being diverted away from the Retention Basins to the Overflow Pond due to the heavy loading of suspended matter in the wastewater. The source of the suspended material was not determined but facility representatives indicated it may be the result of construction activity at various locations at the site.

Conclusions:

<u>Soil/Groundwater</u>: Since the Retention Basins are unlined there is a high potential for release of hazardous constituents, if they are present, to underlying soil and groundwater.

<u>Surface Water</u>: If hazardous constituents are present in the Retention Basin effluent, they would be discharged to the Great Miami River via NPDES Outfall 002 and the Miami-Erie Canal. The basins are not subject to inundation since they are located above the 100-year floodplain of the Great Miami River.

<u>Air</u>: There is a moderate to low potential for release to the air. The basins are open-topped but routinely receive relatively non-volatile liquid constituents. Air releases would occur in the event that a spill of volatile constituents were to be retained by the basins.

Subsurface Gas: The potential for generation of subsurface gas is low due to the relatively inert nature of the wastewater stored in the basins.

7. RETENTION BASINS

7.1. SITE HISTORY

7.1.1. Description of Retention Basins

The three retention basins are open impoundments located on the western edge of Mound Plant, just north of the overflow pond (Figures 1.3 and 7.1). The overflow pond is discussed in section 8. Onsite rainfall runoff and non-contact cooling water flow into the retention basins by way of the plant drainage ditch. The individual basins are separated by concrete walls and have earthen sides and bottoms. The basins regulate the rate of discharge of facility stormwater to the old Miami-Erie Canal and Great Miami River and provide for settling of suspended matter in the runoff. Retention basin effluent is discharged through a standpipe in the westernmost basin to the Great Miami River through NPDES-permitted Outfall 002 and the Miami-Erie Canal. Excess runoff is diverted from the retention basins to the overflow pond. Water from the plant drainage ditch flows into the northernmost basin, discharges to the overflow pond, and finally is pumped into the west basin where the effluent is discharged. Dredged materials removed from the basins in the past were reportedly deposited in the spoils disposal area (Kearney 1988). Monitoring well 0137 is located at the edge of one of the retention basins (Figure 7.1).

7.1.2. Potential Retention Basins Contaminants

The retention basins receive up to approximately 410,000 gallons per day of single-pass cooling water, cooling tower blowdown, and water softener backwash. In addition, stormwater runoff is directed into the basins by way of the plant drainage ditch. The basins received wastewater containing plutonium-238 as a result of the waste disposal pipeline break in 1969 (Kearney 1988).

Radioactive

7.2. EXISTING SITUATION

Water and sediment samples were collected from the retention basins in 1987 (IT 1987). Appendix A contains a complete description of the sampling and analysis performed. Table VII.1 summarizes the analytical results from sediment and water samples collected.

Water sampling was performed with a precleaned, stainless steel zone sampler (IT 1987). Nine individual water samples were collected from the walkway around the periphery of the primary retention basin, to characterize the basin contents. The locations of these samples are shown in Figure 3 of Appendix A.

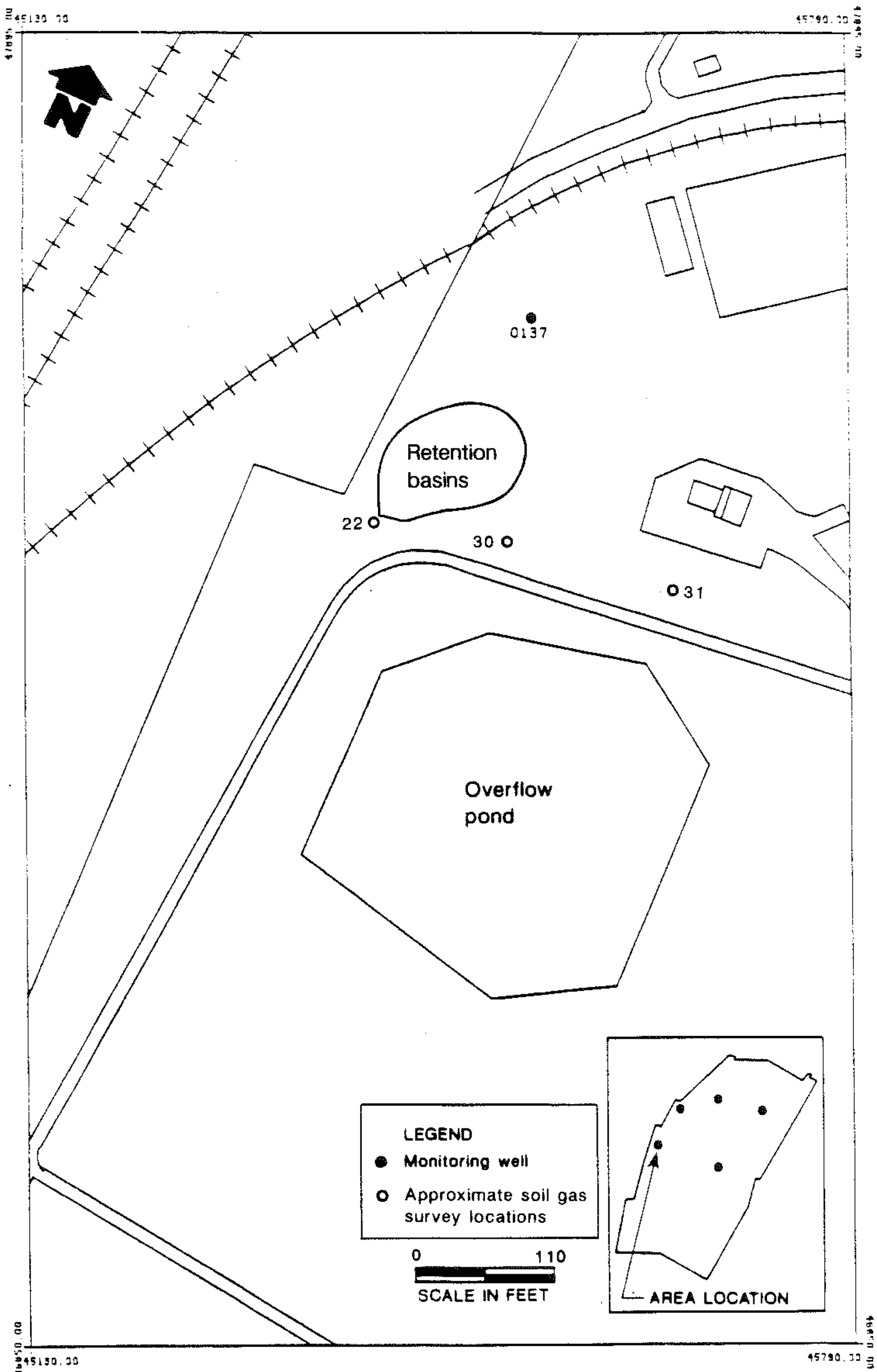


Figure 7.1. Retention basins.

Table VII.1. Water and Sediment Sample Analytical Results for the Retention Basins

Analyte	Matrix	Concentration
Gross alpha	Water	0.0033 pCi/mL
	Sediment	41 pCi/g
Gross beta	Water	<0.02 pCi/mL
	Sediment	<50 pCi/g
Plutonium-238	Water	<0.002 pCi/mL
	Sediment	14.6 pCi/g
Barium	Water	0.023 mg/L
(EP Toxicity)	Sediments	0.31 mg/L

A 10-ft-long, precleaned, 1-inch-diameter PVC pipe was used to collect the sediment cores, or plugs, at each location in the retention basin (IT 1987). Nine sediment samples were collected. The sampling locations of individual sediment samples are essentially the same as those used for water samples.

Quality control samples were collected in conjunction with the water and sediment samples. The samples included a distilled water trip blank, a distilled water equipment rinsate (or field blank), and a sludge sample split (or field duplicate).

Quantitative results of the radiological and chemical analyses from samples collected at the retention basin are presented in Table VII.1. The highest barium concentrations in water (0.023 mg/L) and sediment (0.31 mg/L) were below the EP Toxicity level of 100 mg/L for sediment and the MCL for water of 1.0 mg/L.

7.2.1. Soil Gas Results

Soil gas samples were taken in the vicinity of the retention basins (Figures 1.4 and 7.1). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, benzene, toluene, and ethylbenzene. Benzene and toluene were detected. Table VII.2 presents the results of the survey (DOE 1989a).

7.2.2. Water Sample Analytical Results, Retention Basins

Monitoring well 0137 has been sampled for VOCs. Table VII.3 lists the VOCs that have been detected above the detection limits.

7.3. FIELD INVESTIGATION

Sediment and water samples from the retention basins have been sampled under an earlier investigation (Table VII.1; Appendix A) (IT 1987); therefore, no additional sampling will be performed as part of this limited field investigation.

- I really don't know where samples were taken? Was there a grid? Is it representative?
what about TCLP.
did you sample for constit. found in the soil gas?

Table VII.2. Soil Gas Results for Areas Adjacent to the Retention Basins

Chemical	Concentration	Location
benzene	0.07	31
	1.16	22
toluene	0.24	30
	0.14	31
	0.16	22

Methodology in DOE 1989a.

Table VII.3. Monitoring Well 0137 Analytical Results

Date	Contaminant	Concentration ($\mu g/L$)	MCL ($\mu g/L$)	MCLG ($\mu g/L$)
March 1988	1,2-*trans*-dichloroethene	16.0	70[a]	NE
	1,2-dichloroethane[b]	11.0	5	0
May 1988	1,2-*trans*-dichloroethene	13.0	70[a]	NE
March 1988	styrene[b]	6.0	5	0

Note: MW-0137 analyzed for VOCs
[a]Proposed MCL or MCLG (SDWA 1988)
[b]Measured concentration meets or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

15. Unit Information:

A. Unit Name: Overflow Pond

Capacity: 5 million gallons (Ref. 23, p. 3-8)

Period of Operation: 1979 - present (Ref. 23, p. 3-8)

Waste Type: Rain run-off (Ref. 23, p. 3-8), non contact cooling water blowdown, and softener backwash (Ref. 32). Previously received leachate from Lined Landfill (SWMU 5).

Hazardous Constituents: Unknown

Regulatory Status: NPDES permitted

B. Unit Description: The pond is located near the western boundary of the facility and contains excess rain run-off and other effluents from the low flow retention basins. The pond was formed with an earthen dam and has a 5,000,000 gallon capacity to retain all facility effluents for five days in the event of a contaminant spill. Retention time in the pond allows settling of 95% of all silt (Ref. 23, p. 3-8). The Overflow Pond effluent is discharged from the facility to the Great Miami River via NPDES Outfall 002 at approximately 660,000 gallons per day (Ref. 32). The pond is lined with a minimum of three feet of compacted clay (Ref. 55, p. V-8). Waste residuals in Past Landfill 1 (SWMU 2) remain in the soil beneath the Overflow Pond (Ref. 69, p. 2-2).

Additional Information Needed:

1. Dimensions
2. Hazardous constituents
3. Release controls
4. Clay liner permeability
5. Volume of leachate received
6. Frequency of dredging
7. Dredge spoil management procedures

Unit No.:	SI-2
Unit Name:	Overflow Pond
Unit Description:	The Overflow Pond is located near the southwestern corner of the Mound facility and contains excess stormwater run-off and cooling water blowdown from the Retention Basins (SWMU SI-1) to the north. The pond also receives rainfall runoff and leachate from the Lined Landfill (SWMU LF-1). Construction of the pond began when the wastes from the Past Landfill (SWMU LF-2) were excavated and placed into the Lined Landfill. A portion of those wastes were left in the Past Landfill and still remain below the Overflow Pond (Ref. 69, p. 2-2). The pond is built with earthen dikes and has a 5,000,000 gallon capacity. This volume will retain all facility effluents for five days in the event of a contaminant spill. Retention time in the pond allows settling of 95% of all silt (Ref. 23, p. 3-8). The Overflow Pond effluent is discharged through a standpipe located in the northwest corner of the pond from the facility to the Miami-Erie Canal and the Great Miami River through NPDES Outfall 002 at a rate of approximately 660,000 gallons per day (Ref. 32). The pond is lined with a minimum of three feet of compacted clay (Ref. 55, p. V-8). The dimensions of the Overflow Pond are approximately 300 feet on each side (Ref. 84).
Date of Start-Up:	1979.
Date of Closure:	The Overflow Pond is still in operation.
Wastes Managed:	The Overflow Pond receives stormwater runoff, cooling water blowdown, and water softener backwash through the Plant Drainage Ditch (SWMU MI-1) from various DOE-Mound process facilities. The pond also receives surface runoff and leachate from the Lined Landfill located south of the pond. Leachate drained into the pond for six months in 1978 when saturated wastes were first placed into the Lined Landfill but it has not been observed discharging into the Overflow Pond for the last 14 years (Ref. 66). Since the landfill contains hazardous waste, it is likely that hazardous constituents were present in the leachate. An analysis of pond wastewater or sludge for hazardous constituents has not been conducted.

Release Controls:	Wastewater flows in and out of the Overflow Pond by gravity. The level of liquid is maintained at approximately 10 feet of freeboard by the level of the discharge pipe. The pond is underlain by three feet of compacted clay.	
History of Releases:	There were no unintended releases from the Overflow Pond reported in the file information or noted during the VSI. There was approximately 10 feet of freeboard on the pond during the VSI.	
Conclusions:	Soil/Groundwater:	There is a moderate to high potential for release of hazardous constituents in the pond liquid or sludge to underlying soil and groundwater. There is no leachate collection system to prevent liquids which have migrated through the clay liner from entering native soils.
	Surface Water:	There is a high potential for release of dissolved hazardous constituents to surface water since all wastewater is discharged to the Great Miami River. The Overflow Pond is not subject to surface water inundation since it is located above the river's 100-year floodplain.
	Air:	Although the pond is open-topped, the potential for release to air is low due to the relatively inert and dilute nature of the impounded wastewater.
	Subsurface Gas:	There is a moderate potential for volatile constituents in the sludge to generate subsurface gas beneath the Overflow Pond. Volatile constituents may be present in pond sludge as a result of the leachate discharge from the Lined Landfill.

8. OVERFLOW POND

8.1. SITE HISTORY

8.1.1. Description of Overflow Pond

The overflow pond is located near the southwestern corner of Mound Plant, south of the retention basins (Figures 1.3 and 8.1). The pond contains excess stormwater runoff and cooling water blowdown from the retention basins and plant drainage ditch.

Construction of the pond began when the wastes from the historical landfill were excavated and placed in an encapsulated landfill. A portion of those wastes were left at the location of the past landfill and still remain below the present location of the overflow pond (Kearney 1988). The pond is built with earthen dikes and has a 5,000,000-gallon capacity. This volume will allow all facility effluents to be retained for five days in the event of a contaminant spill. Retention time in the pond allows settling of 95% of all silt (Kearney 1988).

The pond effluent is discharged through a standpipe located in the northwest corner of the pond. The pipe runs from the facility to the Miami-Erie Canal and the Great Miami River through NPDES-permitted Outfall 002. The pond is constructed with a lining of a minimum of 3 ft of compacted clay (Kearney 1988). The pond is approximately 300 ft on each side (Kearney 1988). Monitoring wells 0046, 0152, and 0153 are located west of the overflow pond. Monitoring well 0055 is located in the pond (Figure 8.1).

8.1.2. Potential Overflow Pond Area Contaminants

no H.W.

The overflow pond receives stormwater runoff, cooling water blowdown, and water softener backwash through the plant drainage ditch from various Mound Plant facilities. The overflow pond is monitored by a NPDES station and shows no hazardous constituents. Appendix A contains a description of water and sediment sampling performed in the pond in 1987 (IT 1987).

(check sed. samples. How were they conducted? JW

8.2. EXISTING SITUATION

Water and sediment samples were collected from the overflow pond in 1987. These samples have been found to contain low-level radioactivity (IT 1987; Kearney 1988). Water and sediment samples were also collected from the asphalt-lined pond and retention basins in conjunction with sampling of the overflow pond (IT 1987). Table VIII.1 summarizes the analytical results from sediment and water samples collected from the overflow pond. A complete description of the 1987 water and sediment sampling is contained in Appendix A.

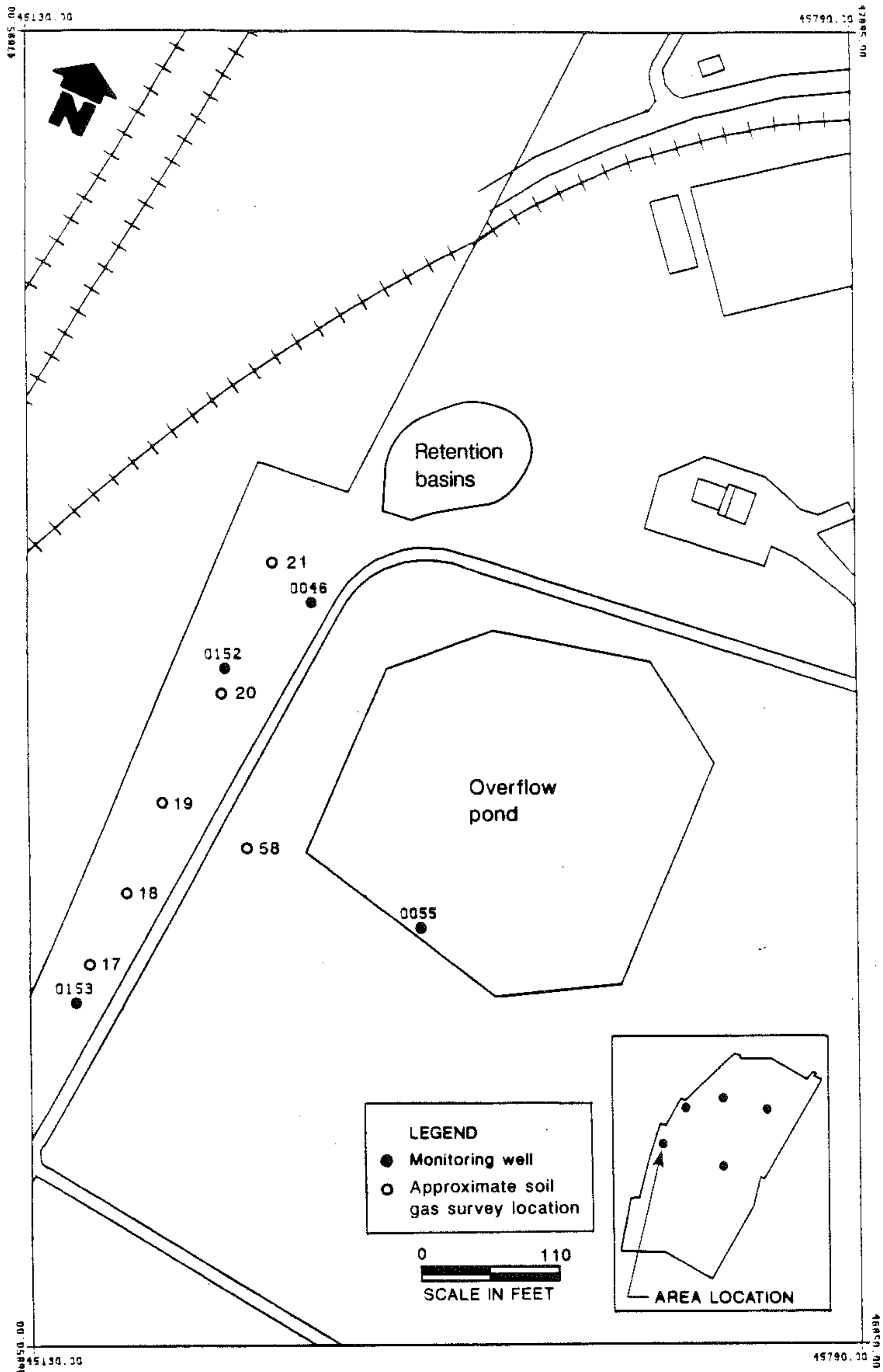


Figure 8.1. Overflow pond.

Table VIII.1. Water and Sediment Sample Analytical Results for the Overflow Pond

Analyte	Matrix	Concentration
Gross alpha	Water	<0.0033 pCi/mL
	Sediment	31 pCi/g
Gross beta	Water	<0.02 pCi/mL
	Sediment	<50 pCi/g
Plutonium-238	Water	<0.002 pCi/mL
	Sediment	37.2 pCi/g
Barium	Water	0.028 mg/L
(EP Toxicity)	Sediments	0.52 mg/L

Water sampling was performed with a precleaned, stainless steel zone sampler. The overflow pond was divided into 4 quadrants; a composite water sample was collected at the midpoint of each quadrant and at the center of the pond (IT 1987). The portion of the water sample needed for VOCs analysis was collected first, to minimize volatilization.

Diana – 2 take it the DMP people reviewed previous invest. techn.?

A 10-ft-long, precleaned, 1-inch-diameter PVC pipe was used to collect the sediment cores, or plugs, at each location in the overflow pond. Three sediment plugs were collected from the center of each quadrant; three plugs were also collected from the center of the pond (IT 1987). These 15 plugs were composited into one sample and containerized.

Quality control samples were collected in conjunction with the water and sediment samples. The samples included a distilled water trip blank, a distilled water equipment rinsate (or field blank), and a sludge sample split (or field duplicate).

Quantitative results for the radiological and chemical analyses from all samples collected at the overflow pond, retention basin, and asphalt-lined pond, are presented in Appendix A. Barium was found in the overflow pond water and sediment samples in concentrations of 0.028 mg/L and 0.52 mg/L, respectively (Table VIII.1). However, these levels are below the EP Toxicity level of 100 mg/L for sediment and MCL of 1.0 mg/L for groundwater.

8.2.1. Overflow Pond Soil Gas Results

Soil gas samples were taken in the vicinity of the overflow pond in June 1987 (Figures 1.4 and 8.1). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, toluene, benzene, and ethylbenzene. Table VIII.2 presents the results of the survey (DOE 1989a).

The soil gas survey near the overflow pond area showed elevated concentrations of several compounds: up to 77.78 μg/L for the chlorinated hydrocarbons and 12.2 μg/L for the other VOCs. However, the Area B Operable Unit is a source of contamination associated with the soil gas findings near the overflow pond (DOE 1989a).

8.2.2. Water Sample Analytical Results, Overflow Pond

Samples from monitoring well 0055 have been analyzed for TCL VOCs. Samples from monitoring well 0046 have been analyzed for TCL VOCs and metals. Samples from monitoring wells 0152 and 0153 have

Table VIII.2. Soil Gas Results for the Overflow Pond Area

Chemical	Concentration ($\mu g/L$)	Location
trichoroethene	25.50	17
	24.40	18
	77.78	19
	0.44	58
1,2-*trans*-dichloroethene	33.60	17
	19.93	18
	5.02	19
chloroethene	48.00	17
	20.20	18
	0.12	19
	0.23	20
benzene	11.10	17
	0.80	18
	12.20	19
	0.63	20
	1.74	21
	0.18	58
toluene	0.96	17
	0.02	18
	1.30	19
	0.11	20
	0.06	58
ethylbenzene	0.76	17
	0.60	18
	0.18	20

Methodology in DOE 1989a.

been analyzed for TCL VOCs, semivolatile organics, pesticides/PCBs, metals, and explosives (DOE 1989a).

The analytes detected in samples from these wells are given in Table VIII.3. Only the contaminants present above the detection limit are given. Area B is a contaminant source for these wells. The overflow pond is physically within Area B, which is being addressed in the Area B Operable Unit (DOE 1989a).

8.3. FIELD INVESTIGATION

Sediment and water samples were collected from the overflow pond as part of the 1987 investigation (IT 1987). Therefore, no sampling will be performed as part of this limited field investigation.

Table VIII.3. Analytical Results for Monitoring Wells in the Overflow Pond Area

Well	Compound	Concentration	MCL	MCLG	Date
0055	1,2-*trans*-dichloroethene	112 µg/L[a]	70 µg/L[b]	NE	02/11/86
	chloroform	8 µg/L	100 µg/L	NE	02/11/86
	ethylbenzene	70 µg/L	700 µg/L[b]	NE	02/11/86
	tetrachloroethene	9 µg/L[a]	5 µg/L[b]	NE	02/11/86
	trichloroethene	32 µg/L[a]	5 µg/L	0	02/11/86
	chloroethene	17 µg/L[a]	2 µg/L	0	02/11/86
	1,2-*trans*-dichloroethene	115 µg/L[a]	70 µg/L[b]	NE	04/29/86
	chloroform	7 µg/L	100 µg/L	NE	04/29/86
	ethylbenzene	152 µg/L	700 µg/L[b]	NE	04/29/86
	tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	04/29/86
	trichloroethene	32 µg/L[a]	5 µg/L	0	04/29/86
	chloroethene	22 µg/L[a]	2 µg/L	0	04/29/86
	1,2-*trans*-dichloroethene	90 µg/L[a]	70 µg/L[b]	NE	05/27/86
	chloroform	4 µg/L	100 µg/L	NE	05/27/86
	ethylbenzene	174 µg/L	700 µg/L[b]	NE	05/27/86
	trichloroethene	20 µg/L[a]	5 µg/L	0	05/27/86
	chloroethene	24 µg/L[a]	2 µg/L	0	05/27/86
	1,2-*trans*-dichloroethene	47 µg/L	70 µg/L[b]	NE	02/27/87
	ethylbenzene	100 µg/L	700 µg/L[b]	NE	02/27/87
	chloroethene	55 µg/L[a]	2 µg/L	0	02/27/87
	1,2-*trans*-dichloroethene	49 µg/L	70 µg/L[b]	NE	03/08/88
	tetrachloroethene	6 µg/L[a]	5 µg/L[b]	NE	03/08/88
	trichloroethene	20 µg/L[a]	5 µg/L	0	03/08/88
	1,2-*trans*-dichloroethene	33 µg/L	70 µg/L[b]	NE	06/28/88
	ethylbenzene	10 µg/L	700 µg/L[b]	NE	06/28/88
	trichloroethene	7 µg/L[a]	5 µg/L	0	06/28/88
	1,2-*trans*-dichloroethene	20 µg/L	70 µg/L[b]	NE	09/12/88
	tetrachloroethene	9 µg/L[a]	5µg/L[b]	NE	09/12/88
	trichloroethene	10 µg/L[a]	5 µg/L	0	09/12/88
0046	lead	100 µg/L[a]	50 µg/L	NE	02/11/86
	1,2-*trans*-dichloroethene	13 µg/L	70 µg/L[b]	NE	02/11/86
	chloroform	2 µg/L	100 µg/L	NE	02/11/86
	tetrachloroethene	8 µg/L[a]	5 µg/L[b]	NE	02/11/86
	trichloroethene	14 µg/L[a]	5 µg/L	0	02/11/86
	pentachlorophenol	47 µg/L	200 µg/L[b]	NE	02/11/86
	1,2-*trans*-dichloroethene	14 µg/L	70 µg/L[b]	NE	04/29/86
	tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	04/28/86
	tetrachloroethene	7 µg/L[a]	5 µg/L[b]	NE	03/08/88
	trichloroethene	10 µg/L[a]	5 µg/L	0	03/08/88
	1,2-*trans*-dichloroethene	5 µg/L	70 µg/L[b]	NE	06/24/88
0152	tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	12/14/87
	total xylenes	7 µg/L	10,000 µg/L[b]	NE	12/14/87
	trichloroethene	13 µg/L[a]	5 µg/L	0	12/14/87
	total xylenes	13 µg/L	10,000 µg/L[b]	NE	12/14/87
	trichloroethene	13 µg/L[a]	5 µg/L	0	12/14/87
	trichloroethene	12 µg/L[a]	5 µg/L	0	03/07/88
	tetrachloroethene	8 µg/L[a]	5 µg/L[b]	NE	06/23/88

Table VIII.3. (continued)

Well	Compound	Concentration	MCL	MCLG	Date
0152	trichloroethene	13 μg/L[a]	5 μg/L	0	06/23/88
(cont.)	trichloroethene	9 μg/L[a]	5 μg/L	0	09/12/88
0153	1,1-dichloroethane	2.2 μg/L	NE	NE	09/13/88
	1,2-*trans*-dichloroethene	1.9 μg/L	70 μg/L[b]	NE	09/13/88
	1,3-*trans*-dichloropropene	2.3 μg/L	NE	NE	09/13/88
	bromodichloromethane	2.1 μg/L	100 μg/L	NE	09/13/88
	bromoform	5.3 μg/L	100 μg/L	NE	09/13/88
	tetrachloroethene	1.7 μg/L	5 μg/L[b]	NE	09/13/88
	trichlorofluoromethane	3.1 μg/L	NE	NE	09/13/88

Note: MW-0055 analyzed for TCL VOCs
MW-0046 analyzed for TCL VOCs and metals
MW-152/153 analyzed for TCL VOCs, semivolatile organics, pesticides/PCBs, metals, and explosives

[a]Concentration meets or exceeds the MCL
[b]Proposed MCL
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

17. Unit Information:

A. Unit Name: Oil Burn Structure
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: The unit is used to test shipping containers by subjecting them to a gas fire for 15 minutes. This test is required for nuclear waste containers to prevent spillage in case of an accident during transport (Ref. 29).

Additional Information Needed:

1. Regulatory status
2. Period of operation
3. Location
4. Dimensions
5. Materials of construction
6. Release controls
7. Hazardous constituents

Unit No.:	MI-3
Unit Name:	Oil Burn Structure
Unit Description:	The Oil Burn Structure is located adjacent to the spillway between the Retention Basins (SWMU SI-1) and Overflow Pond (SWMU SU-2). It is an open-topped, in-ground pit formerly used to test shipping containers by subjecting them to a gas fire for 15 minutes (Ref. 29). The pit has brick lined walls, approximately 10 feet on each side, and eight feet deep. The bottom of the pit is lined with concrete. The unit is now inactive (Ref. 84). Fuel for the Oil Burn Structure was stored in the Aviation Fuel Tank located within 50 feet. During the VSI, there was liquid observed in the bottom of the unit and vegetation growing through the seams in the concrete (Ref. 84).
Date of Start-up:	Early 1970s.
Date of Closure:	The unit was taken out of service in 1979 (Ref. 84).
Wastes Managed:	The Oil Burn Structure was formerly used to confine the test burning operation. An analysis of the combustion residue in the unit for hazardous constituents was not available.
Release Controls:	The unit's walls are lined with brick and the bottom is concrete. There were no features to control emissions from this unit. The unit was registered with the Regional Air Pollution Control Authority (Ref. 84).
History of Releases:	During its operation, emissions from the Oil Burn Structure were discharged directly to the atmosphere. Vegetation was observed growing in the seams of the concrete on the bottom of the unit.
Conclusions:	<u>Soil/Groundwater</u>: There is a high potential for past and ongoing releases to soil and groundwater from this unit. The integrity of the unit is suspect due to the presence of vegetation growing through the cracks in the concrete bottom. Residue from past burns and

rainwater was observed in the bottom of the structure.

Surface Water: The potential for past and ongoing surface water releases is low. The unit is an in-ground structure and combustion residues are confined to the pit.

Air: During its operation, the Oil Burn Structure released combustion emissions directly to the atmosphere. The unit was registered with the Regional Air Pollution Control Authority. There is no potential for ongoing releases since the unit is no longer in service.

Subsurface Gas: There is a moderate potential for generation of subsurface gas since it is possible that fuel may have escaped containment through the concrete bottom of the structure.

9. OIL BURN STRUCTURE

9.1. SITE HISTORY

9.1.1. Description of Oil Burn Structure

The oil burn structure is located adjacent to the spillway between the retention basins and overflow pond (Figure 9.1). The structure is an open-topped, in-ground pit, formerly used to test shipping containers by subjecting them to a gas fire for 15 minutes. The pit has brick-lined walls, approximately 10 ft on each side and 8 ft deep. The bottom of the pit is concrete (thickness of concrete unknown). The structure was taken out of service in 1980. An unknown liquid has been observed in the bottom of the structure, and vegetation is growing through the seams in the concrete (Kearney 1988). Fuel was stored in an aviation fuel tank located within 50 ft of the structure. The aviation fuel tank will be investigated as part of Inactive Underground Storage Tanks, Operable Unit 8. The fire-fighting training facility (section 10) is located southeast of the oil burn structure (Figure 9.1). Monitoring well 0046 is located southwest of the oil burn structure.

fuel is not HW

9.1.2. Potential Oil Burn Structure Contaminants

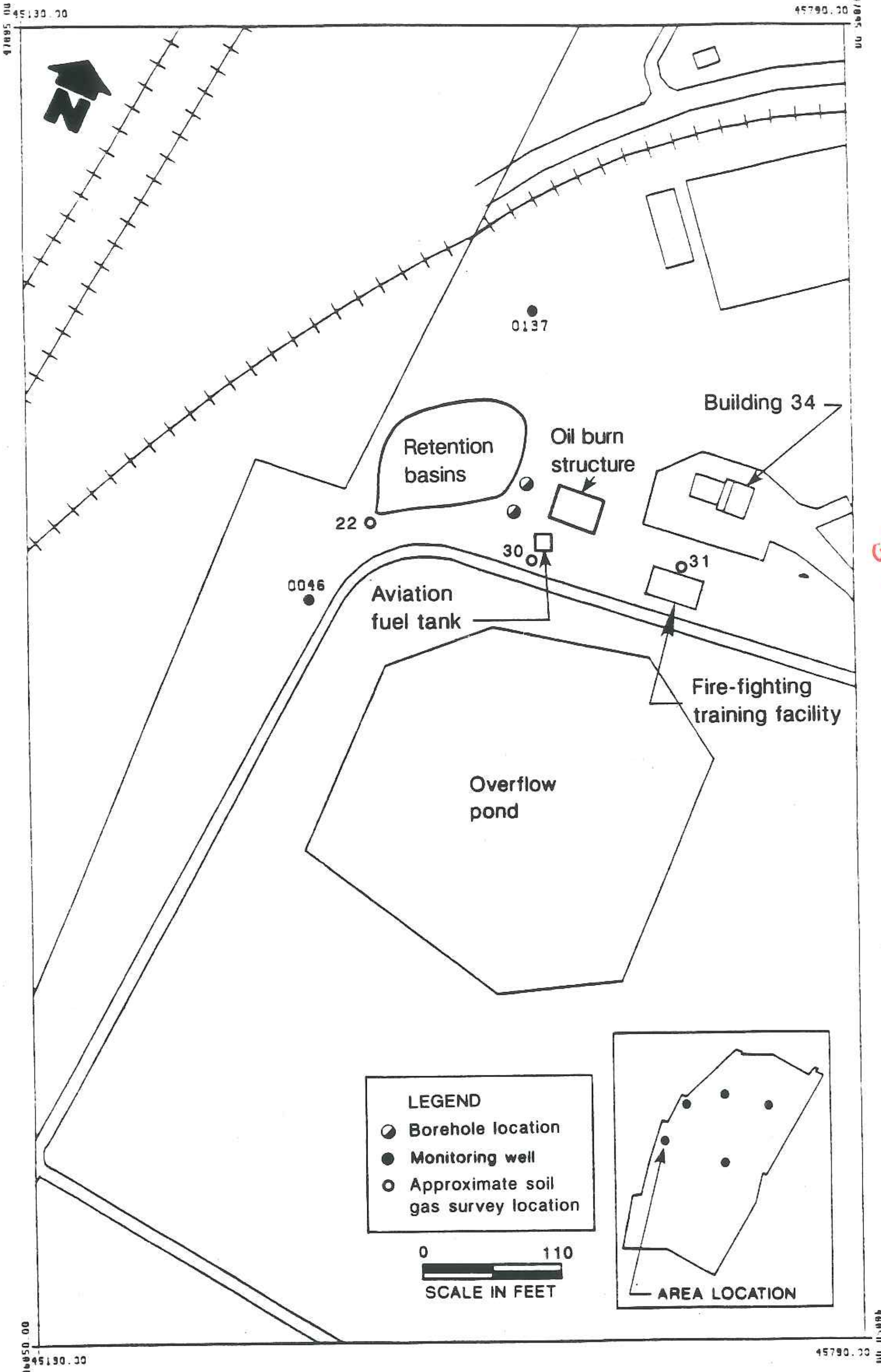
Aviation fuel was used in test-burning operations at the oil burn structure (Kearney 1988). Components of aviation fuel include benzene, toluene, ethylbenzene, and xylenes.

9.2. EXISTING SITUATION

9.2.1. Soil Gas Results

Soil gas samples were taken in 1987 at three locations in the vicinity of the oil burn structure as part of the Area B Operable Unit investigation (Figures 1.5 and 9.1). These locations are also near the aviation fuel tank (Inactive Underground Storage Tanks, Operable Unit 8), the retention basins (section 7), the overflow pond (section 8), and the fire-fighting training pits (section 10) (Figure 9.1). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, benzene, toluene, and ethylbenzene. Benzene and toluene were the only contaminants identified, and concentrations found were: (DOE 1989a)

- 1.16 μg/L of benzene at location 22,
- 0.07 μg/L of benzene at location 31,
- 0.16 μg/L of toluene at location 22,



are these proposed?

Figure 9.1. Oil burn structure.

- 0.24 μg/L of toluene at location 30, and
- 0.14 μg/L of toluene at location 31.

9.2.2. Water Sample Analytical Results

Water samples from monitoring well 0046 have been analyzed for TCL VOCs and metals. The analytes detected in samples from these wells are given in Table IX.1. Only the contaminants present above the detection limit are given. There are other potential contaminant sources for this well.

9.3. FIELD INVESTIGATION

9.3.1. Sampling Objectives and End Use of Data

The objective of sampling at the oil burn structure is to determine if hazardous contaminants are present. If hazardous contaminants are present, a more extensive remedial investigation may be performed.

9.3.2. Sampling Locations

Soil samples will be collected at the borehole locations shown in Figure 9.1. These locations were chosen because they are downgradient of the oil burn structure.

9.3.3. Sampling Activities

Table IX.2 presents the sampling specifications for the oil burn structure.

9.3.4. Soil Sample Collection Protocol

The subsurface soil samples collected at each sampling location at the oil burn structure will be single samples collected at 5 and 10 ft. Each sample will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides. A total of 1,100 mL is required for each sample:

- 60 mL of soil in an amber glass container for TCL VOCs;
- 500 mL of soil in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;

Table IX.1. Analytical Results for Monitoring Wells Associated with the Oil Burn Structure

Well	Compound	Concentration	MCL	MCLG	Date
0046	lead	100 µg/L[a]	50 µg/L	NE	02/11/86
	1,2-*trans*-dichloroethene	13 µg/L	70 µg/L[b]	NE	02/11/86
	chloroform	2 µg/L	100 µg/L	NE	02/11/86
	tetrachloroethene	8 µg/L[a]	5 µg/L[b]	NE	02/11/86
	trichloroethene	14 µg/L[a]	5 µg/L	0	02/11/86
	pentachlorophenol	47 µg/L	200 µg/L[b]	NE	02/11/86
	1,2-*trans*-dichloroethene	14 µg/L	70 µg/L[b]	NE	04/29/86
	tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	04/28/86
	tetrachloroethene	7 µg/L[a]	5 µg/L[b]	NE	03/08/88
	trichloroethene	10 µg/L[a]	5 µg/L	0	03/08/88
	1,2-*trans*-dichloroethene	5 µg/L	70 µg/L[b]	NE	06/24/88

Note: MW-0046 analyzed for TCL VOCs and metals
[a]Concentration meets or exceeds MCL
[b]Proposed MCL
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

Table IX.2. Sampling Specifications for the Oil Burn Structure

Drilling Program

Number of Boreholes: 2
Depth of Boreholes: 10 ft
Total Drilling Footage: 20 ft
Drilling Technique: Hollow-stem auger and split-barrel sampler

Environmental Samples

Subsurface Soil Samples[a]

Number: 4
Depth: 5 ft and 10 ft
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides

Field Quality Control Samples

Trip Blanks

Number: 1 per shipping container containing samples to be analyzed for TCL VOCs compounds
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides

Ambient Blanks

Number: 1
Analytical Parameters: TCL VOCs

Field Duplicates

Number: 1 subsurface soil sample
Analytical Parameters: TCL/TAL semivolatile organics, metals, and PCBs/pesticides

Decontamination Water

Number: 1
Analytical Parameters: TCL VOCs

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[a]The boreholes will be drilled and the subsurface soil samples collected using a hollow-stem auger and split-spoon sampler according to ER Program SOPs 4.1, Soil Boring (revision 2); and 5.1, Soil and Rock Borehole Logging and Sampling (revision 2) (DOE 1988). Each sample will be lithologically described by a geologist, and any stains or discolorations will be noted.

- 500 mL of soil in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and

- 40 mL of soil in a glass vial for screening by the analytical laboratory.

The 60 mL of soil necessary for TCL VOCs analysis will be collected immediately and containerized, followed by the collection and containerizing of the 1,040 mL of soil necessary for the remaining analyses.

A total of four subsurface soil samples will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides. A field duplicate will be analyzed for TCL/TAL semivolatile organics, metals, and PCBs/pesticides.

22. Unit Information:

A. Unit Name: Fire Fighting Training Facility
Period of Operation: Unknown
Waste Type: Deisel or unusable fuel, lumber, cardboard, and paper.
Hazardous Constituents: Unknown
Regulatory Status: Permitted by the Ohio Regional Air Pollution Control Agency (Ref. 44).

B. Unit Description: The lot used for the Fire Training Facility is located on the south end of the facility boundary. The nearest residence is approximately 800 feet away. Burning is conducted twice per week (Ref. 44).

Additional Information Needed:

1. Period of operation
2. Hazardous constituents
3. Dimensions
4. Release controls

Unit No.:	MI-5
Unit Name:	Fire Fighting Training Facility
Unit Description:	The Fire Fighting Training Facility is located just east of the Oil Burn Structure (SWMU MI-3). It consists of two concrete pads, one approximately ten feet on a side and the other, approximately 10 feet wide and 20 feet long. Both pads have 12-inch high concrete curbs. During the VSI, the smaller pad contained a black residue and rainwater. Black stains were also observed on the soil outside the pad. There was no liquid in the larger pad but a black residue was observed. Gasoline fires were created in these pads for demonstration purposes. Three to five gallons of diesel fuel was used to create the fires and water from a nearby hydrant was used to extinguish the fires (Ref. 84). The unit is permitted by the Regional Air Pollution Control Authority (Ref. 44).
Date of Start-up:	Unknown.
Date of Closure:	The facility has not been used since 1987 (Ref. 84).
Wastes Managed:	Diesel fuel was ignited in this area to create demonstration fires. Approximately 300 gallons of fuel was used in 1987 (Ref. 84). An analysis of the black residue in the pads and on the soil for hazardous constituents was not available.
Release Controls:	The fires were created on two concrete pads. There was no control of emissions or water used to extinguish the fires at the unit. No other release controls were observed during the VSI. The unit is permitted by the Regional Air Pollution Control Authority (Ref. 44).
History of Releases:	There was a black liquid observed inside the pad and a black residue on the soil in this area during the VSI. An analysis of the soil, black residue or liquid inside the pad for hazardous constituents was not available.
Conclusions:	<u>Soil/Groundwater</u>: Releases were observed on the soil around the unit during the VSI. There is a high potential for contaminants in the soil to

reach underlying groundwater.

<u>Surface Water</u>: Due to the proximity of the unit to the Plant Drainage Ditch, Retention Ponds and Overflow Ponds, the potential for release of soil contaminants to surface water via rainfall runoff is high.

<u>Air</u>: Past releases to the air were regulated by the Regional Air Pollution Control Authority. The ongoing release potential is low since volatile constituents would have been discharged during combustion.

<u>Subsurface Gas</u>: There is a moderate to high potential for generation of subsurface gas since diesel fuel was used at the site. Stains were noted near the pad indicating that infiltration of wastes into the soil has already occurred.

10. FIRE-FIGHTING TRAINING FACILITY

10.1. SITE HISTORY

10.1.1. Description of Fire-Fighting Training Facility

The fire-fighting training facility is located south of Building 34 and southeast of the retention basins and the oil burn structure (Figures 1.3 and 10.1). The facility consists of two concrete pads: one approximately 10 ft long by 10 ft wide, and the other approximately 10 ft wide and 20 ft long. Both pads have 12-inch-high concrete curbs. The smaller pad has black residue, rainwater stains, and black stains on the soil outside the pad. There was no liquid on the larger pad but black residue was observed (Kearney 1988). Three to five gallons of diesel fuel were used to create training fires; water from a nearby hydrant was used to extinguish the fires. The aviation fuel tank is located to the east of the fire-fighting training facility and is being addressed in the Inactive Underground Storage Tanks Operable Unit. Monitoring well 0046 is located southwest of the fire-fighting training facility (Figure 10.1).

10.1.2. Potential Fire-Fighting Training Facility Contaminants

Diesel fuel was used in the fire-fighting training facility to create demonstration fires. Approximately 300 gallons of diesel fuel were used in 1987 (Kearney 1988).

How much since?

10.2. EXISTING SITUATION

10.2.1. Soil Gas Results, Fire-Fighting Training Facility

Soil gas samples were taken in the area of the fire-fighting training facility in June 1987, as part of the Area B Operable Unit investigation (Figure 9.1). These locations are also close to the aviation fuel tank and the oil burn structure (Figure 1.5). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, toluene, benzene, and ethylbenzene. Benzene and toluene were the only contaminants identified, and concentrations found were: (DOE 1989a)

- 1.16 µg/L of benzene at location 22,
- 0.07 µg/L of benzene at location 31,
- 0.16 µg/L of toluene at location 22,
- 0.24 µg/L of toluene at location 30, and
- 0.14 µg/L of toluene at location 31.

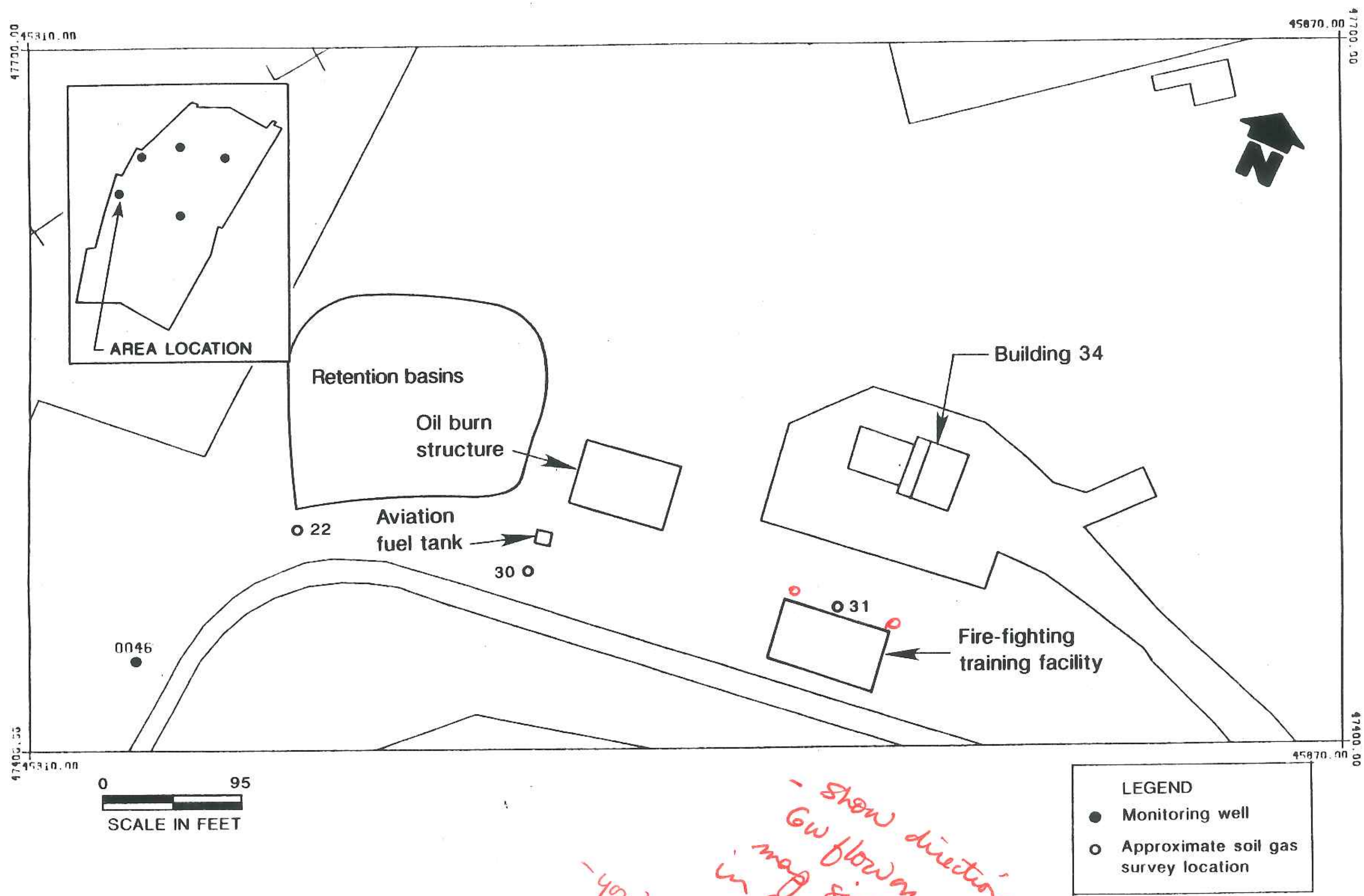

Figure 10.1. Fire-fighting training facility.

- show direction of GW flow on each map since N is always in a diff. direction

- you can do it on

The diesel fuel used in this area may be a potential source for these compounds.

10.2.2. Water Sample Analytical Results, Fire-Fighting Training Facility

Water samples from monitoring well 0046 have been analyzed for TCL VOCs and metals. These results are presented in Table X.1. Only the analytes present above the detection limit are given. There are other potential sources for this well.

10.3. FIELD INVESTIGATION

10.3.1. Sampling Objectives and End Use of Data

The objective of sampling at the fire-fighting training facility is to identify hazardous contaminants that may be present. If hazardous contaminants are present in any of the samples taken during this limited field investigation, a more extensive remedial investigation may be conducted.

where is the water table?

10.3.2. Sampling Locations

Sampling locations will be determined by the field manager during field activities. Locations where stains or residue are present will be sampled. Surface and subsurface samples will be collected at four locations to identify potential hazardous compounds. The samples will be analyzed for TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, and metals.

10.3.3. Sampling Activities

Table X.2 presents the sampling specifications for the fire-fighting training facility.

10.3.4. Soil Sample Collection Protocol

The soil samples collected in the fire-fighting training facility will be single samples collected at discrete depths and locations. These samples will be analyzed for TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, and metals. A total of 1,100 mL is required for each sample:

- 60 mL of soil in an amber glass container for TCL VOCs;
- 500 mL of soil in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;

Table X.1. Water Sample Analytical Results for Monitoring Well 0046

Compound	Concentration	MCL	MCLG	Date
lead	100 µg/L[a]	50 µg/L	NE	02/11/86
1,2-*trans*-dichloroethene	13 µg/L	70 µg/L[b]	NE	02/11/86
chloroform	2 µg/L	100 µg/L	NE	02/11/86
tetrachloroethene	8 µg/L[a]	5 µg/L[b]	NE	02/11/86
trichloroethene	14 µg/L[a]	5 µg/L	0	02/11/86
pentachlorophenol	47 µg/L	200 µg/L[b]	NE	02/11/86
1,2-*trans*-dichloroethene	14 µg/L	70 µg/L[b]	NE	04/29/86
tetrachloroethene	5 µg/L[a]	5 µg/L[b]	NE	04/28/86
tetrachloroethene	7 µg/L[a]	5 µg/L[b]	NE	03/08/88
trichloroethene	10 µg/L[a]	5 µg/L	0	03/08/88
1,2-*trans*-dichloroethene	5 µg/L	70 µg/L[b]	NE	06/24/88

Note: MW-0046 analyzed for TCL VOCs and metals
[a]Proposed MCL or MCLG (SDWA 1988)
[b]Measured concentration meets or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

Table X.2. Sampling Specifications for the Fire-Fighting Training Facility

Drilling Program

Number of Boreholes: 4
Depth of Boreholes: 10 ft
Total Drilling Footage: 40 ft
Drilling Technique: Hollow-stem auger rig and split-barrel sampler

Environmental Samples

Surface Soil Samples

Number: 4
Depth: 0 to 6 inches
Analytical Parameters: TCL VOCs, semivolatile organics, PCBs/pesticides, and metals

Subsurface Soil Samples[a]

Number: 8
Depth: 5 and 10 ft
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, and metals

Field Quality Control Samples

Trip Blanks

Number: 1 per shipping container containing samples to be analyzed for TCL VOCs
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, and metals

Ambient Blanks

Number: 1
Analytical Parameters: TCL VOCs

Field Duplicates[b]

Number: 1 surface soil sample
Analytical Parameters: TCL/TAL semivolatile organics, PCBs/pesticides, and metals

Decontamination Water

Number: 1
Analytical Parameters: TCL VOCs

---

[a]The boreholes will be drilled and the samples obtained using a hollow-stem auger and split-spoon sampler according to ER Program SOPs 4.1, Soil Boring (revision 2); and 5.1, Soil and Rock Borehole Logging and Sampling (revision 2) (DOE 1988). Each sample will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]A field duplicate will be collected from a surface soil sample. The portion of the original sample (60 mL) needed for VOC analysis will be removed first. The remainder of the soil will be analyzed for TCL/TAL semivolatile organics, PCBs/pesticides, and metals. For this sample only, a total of 1,640 mL of soil is needed for the soil sample, which will be split to form a duplicate.

- 500 mL of soil in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and

- 40 mL of soil in a glass vial for screening by the analytical laboratory.

The 60 mL of soil necessary for TCL VOCs analysis will be collected immediately and containerized, followed by the collection and containerizing of the 1,040 mL of soil necessary for the remaining analyses.

A total of four surface and eight subsurface soil samples will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides. A field duplicate of a surface soil sample will be collected and analyzed for TCL/TAL semivolatile organics, metals, and PCBs/pesticides.

Unit No.:	CS-18
Unit Name:	WD Building Drum Staging Area
Unit Description:	The WD Building Drum Storage Area is located outdoors on the south side of the WD Building Annex. Approximately ten 55-gallon drums were present in this area during the VSI. Contents of at least two of these drums were small pieces of glass used in the Glass Melter Furnace (SWMU IN-1). Several other drums had closed tops. The Drum Staging Area is underlain by a concrete pad which is sloped to the south (Ref. 84).
Date of Start-up:	1981.
Date of Closure:	The unit is still in service.
Wastes Managed:	At least two of the drums contained small pieces of glass used in the Glass Melter Furnace. The contents of the closed-topped drums were not determined (Ref. 84). An analysis of the contents of the drums for hazardous constituents was not available.
Release Controls:	The Drum Staging Area is underlain by a concrete pad which is sloped to drain runoff from the area. There is no curbing on the pad to prevent runoff from discharging off the pad to the south (Ref. 84).
History of Releases:	Stains were observed on the concrete pad in the Drum Staging Area. The stains extended off the pad to the south. Two drums containing glass were open-topped exposing the wastes to precipitation.
Conclusions:	<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is unknown since the nature of the waste was not provided. If hazardous constituents are present, there is a high potential for release to adjacent soil. Some waste drums were uncovered and stains were noted extending off the pad to uncovered soil.

Surface Water:	If hazardous constituents are present, the potential for release to surface water is high. Runoff from the Drum Staging Area is allowed to run off-site without treatment.
Air:	The potential for release to air is low due to the relatively non-volatile nature of wastes in the open drums.
Subsurface Gas:	The potential for generation of subsurface gas is low. Wastes are contained in drums on an above-ground concrete pad.

11. WD BUILDING DRUM STAGING AREA

11.1. SITE HISTORY

11.1.1. Description of WD Building Drum Staging Area

The WD Building drum staging area is located southeast of the WD Building and west of Buildings 23 and 79 (Figures 1.3 and 11.1). Both empty and partially filled 55-gallon drums are staged in this area. The drum staging area is underlain by a concrete pad, which is sloped to the south to drain runoff. There is no curbing on the pad to prevent runoff from discharging to the south (Kearney 1988). Monitoring well 0227 is located downgradient of the WD Building drum staging area.

The radioactive/mixed waste storage area (not part of this site, but adjacent to it inside the WD Building; see section 22) stores radioactive/mixed wastes including scintillation vials and acid/base waste, PCBs, lead, uranium, thorium, mercury, ethylene glycol, oils, paint thinner, and mixed unknown chemicals. Materials at the WD Building drum staging area may not include all of these materials and no inventory is available.

Do an inventory

11.1.2. Potential WD Building Drum Staging Area Contaminants

It has been reported that some of the open drums in the drum staging area contain small pieces of glass from the glass melter furnace (section 13; Kearney 1988). The wastes in these drums are exposed to precipitation. Stains have been observed extending from the concrete pad to the adjacent soil (Kearney 1988).

11.2. EXISTING SITUATION

11.2.1. Soil Gas Results, WD Building Drum Staging Area

Soil gas samples were taken downslope from the WD Building drum staging area in June 1987 (Figure 1.4). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, toluene, benzene, and ethylbenzene. Table XI.1 presents the results of the survey (DOE 1989a). Low concentrations of 1,2-*trans*-dichloroethene, chloroethene, benzene, and toluene were detected (DOE 1989a).

11.2.2. Water Sample Analytical Results, WD Building Drum Staging Area

Water samples from monitoring well 0227 have been analyzed for TCL VOCs, semivolatile organics, metals, and explosives. Nitrate-nitrite was detected in December 1987, in a concentration of 30.5 mg/L. The

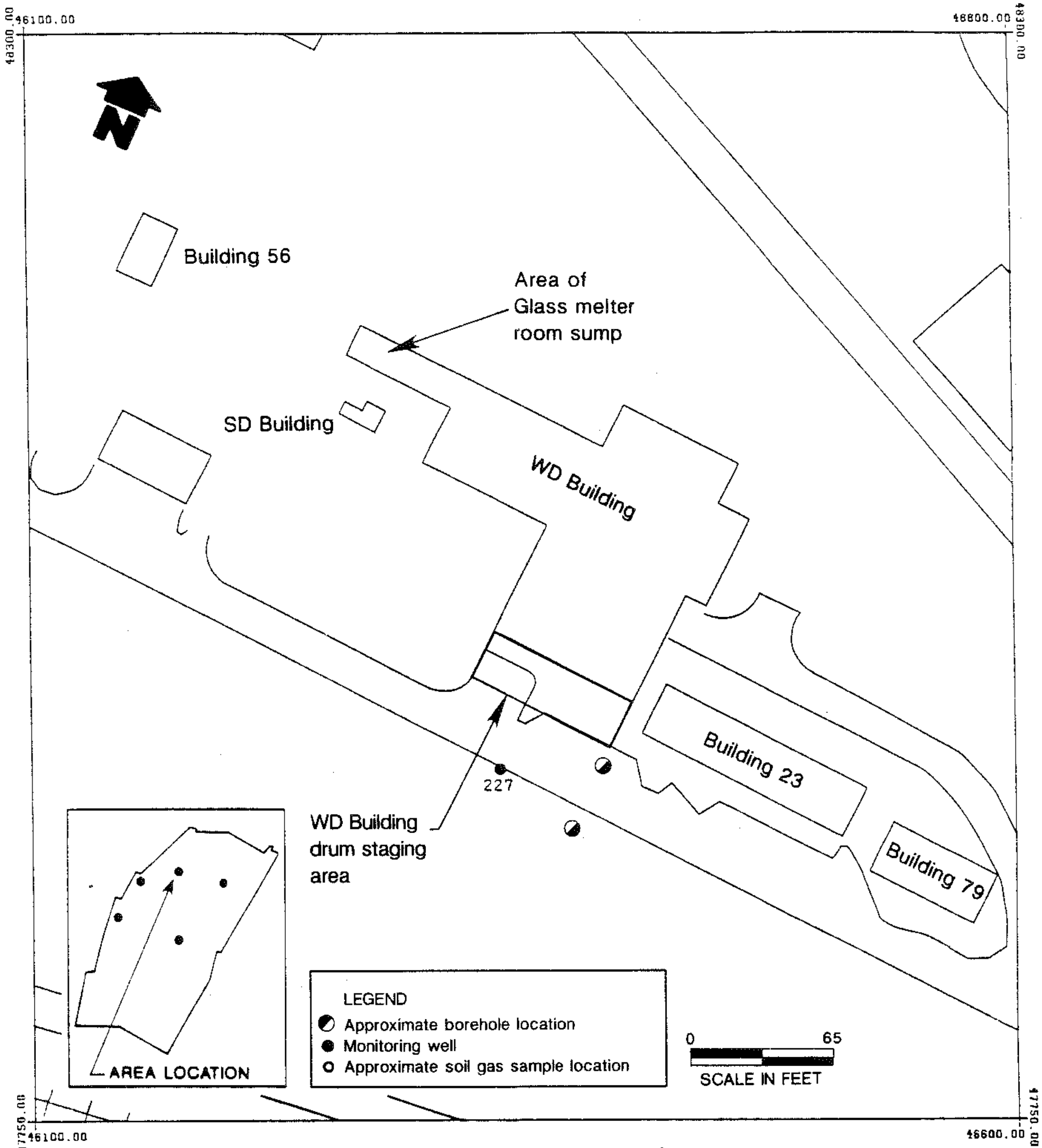

Figure 11.1. WD Building drum staging area.

Table XI.1. Soil Gas Results for Locations 36, 37, and 38

Chemical	Concentration (μg/L)	Location
1,2-*trans*-dichloroethene	0.01	38
chloroethene	0.01	38
benzene	0.06	36
	0.11	37
	0.04	38
toluene	0.02	36
	0.03	37
	0.02	38

Methodology in DOE 1989a.

MCL for nitrate-nitrite is 10 mg/L. A nitrate-nitrite source has not been identified. No other contaminants have been detected.

11.3. FIELD INVESTIGATION

11.3.1. Sampling Objectives and End Use of Data

The objective of sampling at the WD Building drum staging area is to identify hazardous contaminants that may be present due to leaks from the drums. If hazardous contaminants are present in any of the samples from this limited field investigation, a more extensive remedial investigation may be performed.

11.3.2. Sampling Locations

Soil samples will be taken at two locations along the southern edge of the WD Building drum staging area, just off the concrete pad. This is where potential releases would drain and where stains have been observed. These approximate locations are shown in Figure 11.1. The actual locations will be determined based on field observations. The samples will be analyzed for TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives.

11.3.3. Sampling Activities

Table XI.2 presents the sampling specifications for the WD Building drum staging area.

11.3.4. Soil Sample Collection Protocol

The soil samples collected in the WD Building drum staging area will be single samples collected at discrete depths and locations; these samples will be analyzed for TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives. A total of 1,350 mL is required for each sample:

- 60 mL of soil in an amber glass container for TCL VOCs;
- 500 mL of soil in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;
- 250 mL of soil in an amber glass container for RDX, HMX, and PETN;
- 500 mL of soil in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL of soil in a glass vial for screening by the analytical laboratory.

Table XI.2. Sampling Specifications for the WD Building Drum Staging Area

Drilling Program

Number of Boreholes: 2
Depth of Boreholes: 10 ft
Total Drilling Footage: 20 ft
Drilling Technique: Hollow-stem auger rig and split-barrel sampler

Environmental Samples

Surface Soil Samples[a]

Number: 2
Depth: 0 to 6 inches
Analytical Parameters: TCL/TAL VOCs; semivolatile organics; PCBs/pesticides; metals; and PETN, RDX, and HMX explosives

Subsurface Soil Samples[b]

Number: 4
Depth: 5 and 10 ft in each borehole
Analytical Parameters: TCL/TAL VOCs; semivolatile organics; PCBs/pesticides; metals; and PETN, RDX, and HMX explosives

Field Quality Control Samples

Trip Blanks

Number: 1 per shipping container containing samples to be analyzed for TCL VOCs
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL VOCs; semivolatile organics; PCBs/pesticides; metals; and PETN, RDX, and HMX explosives

Ambient Blanks

Number: 1
Analytical Parameters: TCL VOCs

Field Duplicates[c]

Number: 1 surface sample
Analytical Parameters: TCL/TAL semivolatile organics; PCBs/pesticides; metals; and PETN, RDX, and HMX explosives

Table XI.2. (continued)

Decontamination Water

Number: 1
Analytical Parameters: TCL VOCs

---

[a]Surface soil samples will be collected according to ER Program SOP 5.2., Soil Sampling with a Spade and Scoop (revision 2) (DOE 1988). The samples will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]The boreholes will be drilled and the samples obtained using a hollow-stem auger and split-spoon sampler according to ER Program SOPs 4.1, Soil Boring (revision 2); and 5.1, Soil and Rock Borehole Logging and Sampling (revision 2) (DOE 1988). Each sample will be lithologically described by a geologist, and any stains or discolorations will be noted.

[c]A field duplicate will be collected of a surface soil sample. The portion of the original sample (60 mL) needed for VOC analysis will be removed first. The remainder of the soil will be split to form a duplicate and each sample analyzed for TCL/TAL semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives. For this sample only, a total of 2,100 mL of soil is needed from the soil sample, which will be split to form a duplicate.

The 60 mL of soil necessary for TCL VOCs analysis will be collected immediately and containerized, followed by the collection and containerizing of the 1,290 mL of soil necessary for the remaining analyses.

A total of four subsurface soil samples and two surface samples will be analyzed for TCL/TAL VOCs, semivolatile organics, PCBs/pesticides, metals, and PETN, RDX, and HMX explosives. A field duplicate will be collected of a surface soil sample and analyzed for TCL/TAL semivolatile organics, metals, and pesticides/ PCBs.

12. BUILDING 72 STORAGE AREA

12.1. SITE HISTORY

12.1.1. Description of Building 72 Storage Area

The Building 72 storage area is located around Building 72 (Figures 1.3 and 12.1). The empty drum storage and the outdoor hazardous waste storage areas are the two components of the Building 72 storage area. The empty drum storage area is an outdoor unit located near the northeast corner of Building 72. The outdoor hazardous waste storage area is located outside the east and south walls of Building 72 (Figure 12.1). Monitoring well 0137 is located southwest (downgradient), and monitoring well 0122 is located southeast of the Building 72 storage area (Figure 12.1).

The 55-gallon drums stored in the drum storage area are empty and are covered with a canvas tarpaulin. The 55-gallon drums in the outdoor hazardous waste storage area contain chemical wastes from various processing facilities at Mound Plant. All of the drums are stored on an asphalt pad, which is sloped to two catch basins at the east end of Building 72. The asphalt pad is surrounded by a 6-inch concrete curb. The catch basins collect storm runoff from these areas and discharge it to the plant drainage ditch (Kearney 1988). The plant drainage ditch is being sampled under the Radioactively Contaminated Soil Operable Unit (DOE 1989d). The drums in the outdoor hazardous waste storage area are stored on the asphalt pad until they are transported offsite for disposal (Kearney 1988).

The Building 72 area is contiguous with Area 3 of Radioactively Contaminated Soil, Operable Unit 5. Area 3 was the historical site of redrumming operations for thorium. Building 72 is built on construction fill material placed over this area.

12.1.2. Potential Building 72 Storage Area Contaminants

The drums stored at the empty drum storage area formerly contained hazardous wastes generated by onsite activities. The outdoor hazardous waste storage area holds 55-gallon drums which contain chemical wastes generated from various processes at the Mound Plant. These wastes include the following:

- organic solvents such as acetone, isopropanol, methanol, trichloroethene, and chlorinated fluorocarbons;
- waste oils;
- paints and thinners;

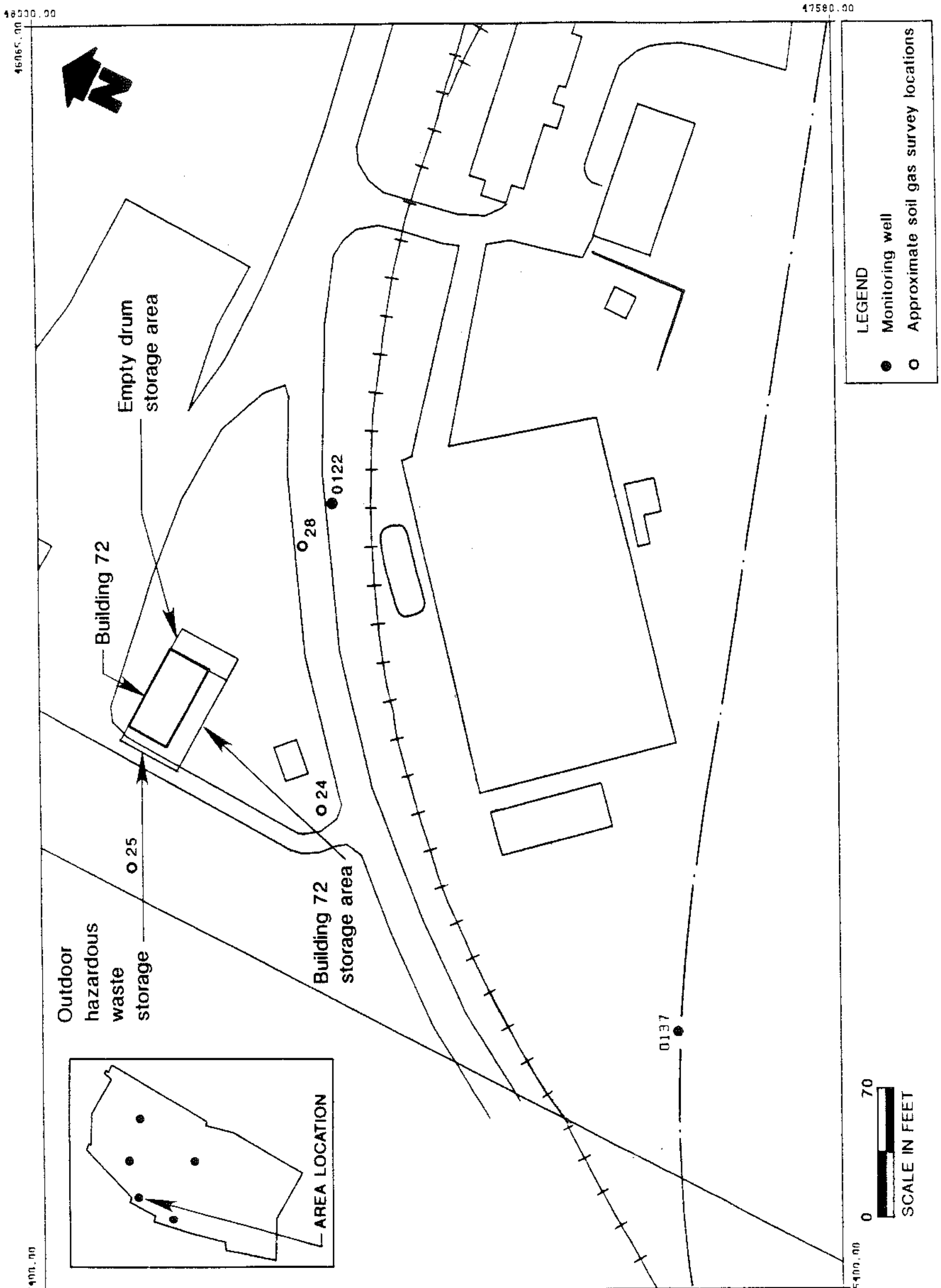

Figure 12.1. Building 72 storage area.

- spent plating solutions such as chromic acid, cadmium cyanide, nickel sulfate, nickel chloride, copper cyanide;
- photoprocessing wastes such as spent fixer solution, developers, bleaches, rinses;
- extraction procedure toxic wastes; and
- polymer wastes.

Stains on the asphalt pads have been observed; therefore, past releases of hazardous wastes could have occurred in these areas. However, the potential for contamination of the underlying soils is low because of the presence of the asphalt pads (Kearney 1988).

12.2. EXISTING SITUATION

12.2.1. Soil Gas Results

Soil gas samples were taken in the vicinity of the Building 72 storage area in 1987 as part of the Area B Operable Unit investigation (Figures 1.4 and 12.1). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, benzene, toluene, and ethylbenzene. Table XII.1 presents the results of the survey (DOE 1989a). The soil gas survey in the vicinity of the Building 72 storage area shows elevated concentrations of several compounds, including benzene, toluene and ethylbenzene. There are no currently identified sources for these compounds. waste oils?

12.2.2. Water Sample Analytical Results, Building 72 Storage Area

Water samples from monitoring well 0137 have been analyzed for TCL VOCs and metals. Samples from 0122 have been analyzed for TCL VOCs, semivolatile organics, and metals. Table XII.2 presents the analytes detected in 0137, above the detection limits. No analytes have been detected in samples from 0122. Elevated levels of contaminants could be derived at least in part from other potentially contaminated areas close to the Building 72 storage area.

Table XII.1. Soil Gas Results for the Building 72 Storage Area

Chemical	Concentration ($\mu g/L$)	Location
benzene	1.96	25
	0.21	28
	0.05	24
toluene	0.59	25
	0.63	28
ethylbenzene	0.56	25
	0.34	28

Methodology in DOE 1989a.

Table XII.2. Monitoring Well 0137

Date	Contaminant	Concentration ($\mu g/L$)	MCL ($\mu g/L$)	MCLG ($\mu g/L$)
March 1988	1,2-*trans*-dichloroethene	16.0	70[a]	NE
	1,2-dichloroethane[b]	11.0	5	0
May 1988	1,2-*trans*-dichloroethene	13.0	70[a]	NE
March 1988	styrene[b]	6.0	5	0

Note: MW-0137 analyzed for VOCs
[a]Proposed MCL or MCLG (SDWA 1988)
[b]Measured concentration meets or exceeds the MCL, MCLG, proposed MCL, or proposed MCLG
MCL - Maximum contaminant level (40 CFR 141)
MCLG - Maximum contaminant level goal (40 CFR 141 and 143)
NE - Not established

12.3. FIELD INVESTIGATION

12.3.1. Sampling Objectives and End Use of Data

The objective of sampling at the Building 72 storage area is to identify hazardous contaminants that may be present. If hazardous contaminants are present in any of the samples from this limited field investigation, a more extensive remedial investigation may be performed.

The data obtained from this investigation at the Building 72 storage area may be used to

- identify releases of hazardous contaminants with the potential to contaminate the groundwater, and
- identify sections of the Building 72 storage area that require additional investigation, or
- establish that no releases of hazardous contaminants have occurred at any of the Building 72 storage area sampling locations and show that there is no need for further investigation.

12.3.2. Sampling Locations

Six near-surface soil samples will be collected from this area. Sampling locations will be determined by the field manager during field activities. The samples will be collected in catch basins and in areas where stains or discolored asphalt or soil are present. The samples will be analyzed for TCL VOCs, semivolatile organics, metals, PCBs/pesticides, and cyanide. In addition, data from analysis of subsurface samples from Area 3 sampling locations near Building 72 can be used in support of sampling objectives. Area 3 will be sampled as part of the Radioactively Contaminated Soil Operable Unit (DOE 1989d).

12.3.3. Sampling Activities

Table XII.3 presents the sampling specifications for the Building 72 storage area.

12.3.4. Soil Sample Collection Protocol

The six near-surface soil samples collected in the Building 72 storage area will be single samples collected below the asphalt or at exposed soil. These samples will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides. A total of 1,100 mL is required for each sample:

- 60 mL of soil or sediment in an amber glass container for TCL VOCs;
- 500 mL of soil or sediment in an amber glass container for TCL/TAL metals, semivolatile organics, PCBs/pesticides, and cyanide;

Table XII.3. Sampling Specifications for the Building 72 Storage Area

Environmental Samples

Near-surface Soil Samples[a]

Need deeper samples - VOC will not be picked up if spills happened a while ago.

Number: 6
Depth: 0 to 6 inches
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and cyanide

Field Quality Control Samples

Trip Blanks

Number: 1 per shipping container containing samples to be analyzed for TCL VOCs
Analytical Parameters: TCL VOCs

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL VOCs, semivolatile organics, metals, and PCBs/pesticides

Ambient Blanks

Number: 1
Analytical Parameters: TCL VOCs

Field Duplicates[b]

Number: 1 near-surface soil sample
Analytical Parameters: TCL/TAL semivolatile organics, metals, PCBs/pesticides, and cyanide

Decontamination Water

Number: 1
Analytical Parameters: TCL VOCs

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[a]The near-surface soil samples will be collected according to ER Program SOP 5.2, Soil Sampling with Spade and Scoop (revision 2) (DOE 1988). If the materials are too hard, a sample will be collected using a hand auger as per the ER Program SOP 5.3, Subsurface Solid Sampling with a Hand Auger and Thin-Walled Sampler (revision 2) (DOE 1988). The samples will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]A field duplicate will be collected from a near-surface soil sample at a single location. The portion of the sample (60 mL) needed for VOC analysis will be removed first. The remainder of the sample will be analyzed for TCL/TAL semivolatile organics, metals, PCBs/pesticides, and cyanide. For this sample only, a total of 1,600 mL of soil is needed from the soil sample, which will be split to form the field duplicate.

- 500 mL of soil or sediment in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and

- 40 mL of soil or sediment in a glass vial for screening by the analytical laboratory.

The 60 mL of soil necessary for TCL VOCs analysis will be collected immediately and containerized, followed by the collection and containerizing of the 1,040 mL of soil necessary for the remaining analyses.

Unit No.: SU-1

Unite Name: Glass Melter Room Sump

Unit Description: The Glass Melter Room Sump is a covered, concrete-lined unit located in the basement of the WD Building beneath the Glass Melter Furnace (SWMU IN-1). It is approximately three feet in diameter. The sump was covered and its depth could not be determined. The sump is used to collect wastewater from the Glass Melter's Off-Gas Treatment System and washwater from the floor of the Glass Melter Room. Wastewater in the sump is pumped into the Influent Tank in the Alpha Wastewater Treatment System (SWMU WD-2).

Date of Start-Up: 1981.

Date of Closure: The sump is still in service.

Wastes Managed: The sump receives wastewater from the Glass Melter's Off-Gas Treatment System and from the floor of the Glass Melter Room. An analysis of the wastewater contained in the sump for hazardous constituents was not available.

Release Controls: The sump is concrete-lined, located indoors, and covered where it is protected from rainfall runoff. The sump pump is automatically activated to prevent overflows (Ref. 84).

History of Releases: There were no releases noted in the file information. There were no releases observed during the VSI but the integrity of the sump could not be determined.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is unknown because the integrity of the sump liner could not be determined.

Surface Water: The potential for release to surface water is low since the sump is located indoors and more than 600 feet from the Plant Drainage Ditch.

Air:	The potential for release to the air is low from this indoor, covered sump due to the inert nature of the wastewater.
Subsurface Gas:	The potential for generation of subsurface gas is low since the sump is lined and due to the inert nature of the wastewater.

13. GLASS MELTER ROOM SUMP

13.1. SITE HISTORY

13.1.1. Description of Glass Melter Room Sump

The glass melter room sump is a concrete unit located in the WD Building annex, beneath the glass melter furnace (Figures 1.3 and 13.1) (Kearney 1988). The furnace is used to incinerate various hazardous wastes and radioactive mixed wastes generated by onsite activities. Floor drains discharge wash water from the floor beneath the furnace to the sump. The sump is approximately 4 ft in diameter and 8 ft deep and is covered. It is reported to have been used for trials and not routine collection (Mound Plant 1989). The sump was also used to collect wastewater from several drains originating from the glass melter's off-gas treatment system and wash water from the floor of the glass melter room (Kearney 1988). Monitoring well 227 is located downgradient of the WD Building (Figure 13.1).

Mound Plant personnel describe the sump as being plugged and, therefore, not capable of being operated at top efficiency. Mound Plant is currently in the process of acquiring an RCRA Part B permit that covers operation of the glass melter room sump.

13.1.2. Potential Glass Melter Room Sump Contaminants

Potential contamination of the sump may be associated with wastewater being treated by the off-gas treatment system and floor wash-water (Mound 1989).

13.2. EXISTING SITUATION

13.2.1. Water Sample Analytical Results, Glass Melter Room Sump

Samples from monitoring well 227 have been analyzed for TCL VOCs and metals. Nitrate-nitrite is the only analyte that has been detected above the detection limits, at a concentration of 30 mg/L, in December 1987. The MCL for nitrate-nitrite is 10 mg/L. A source for nitrate has not been identified.

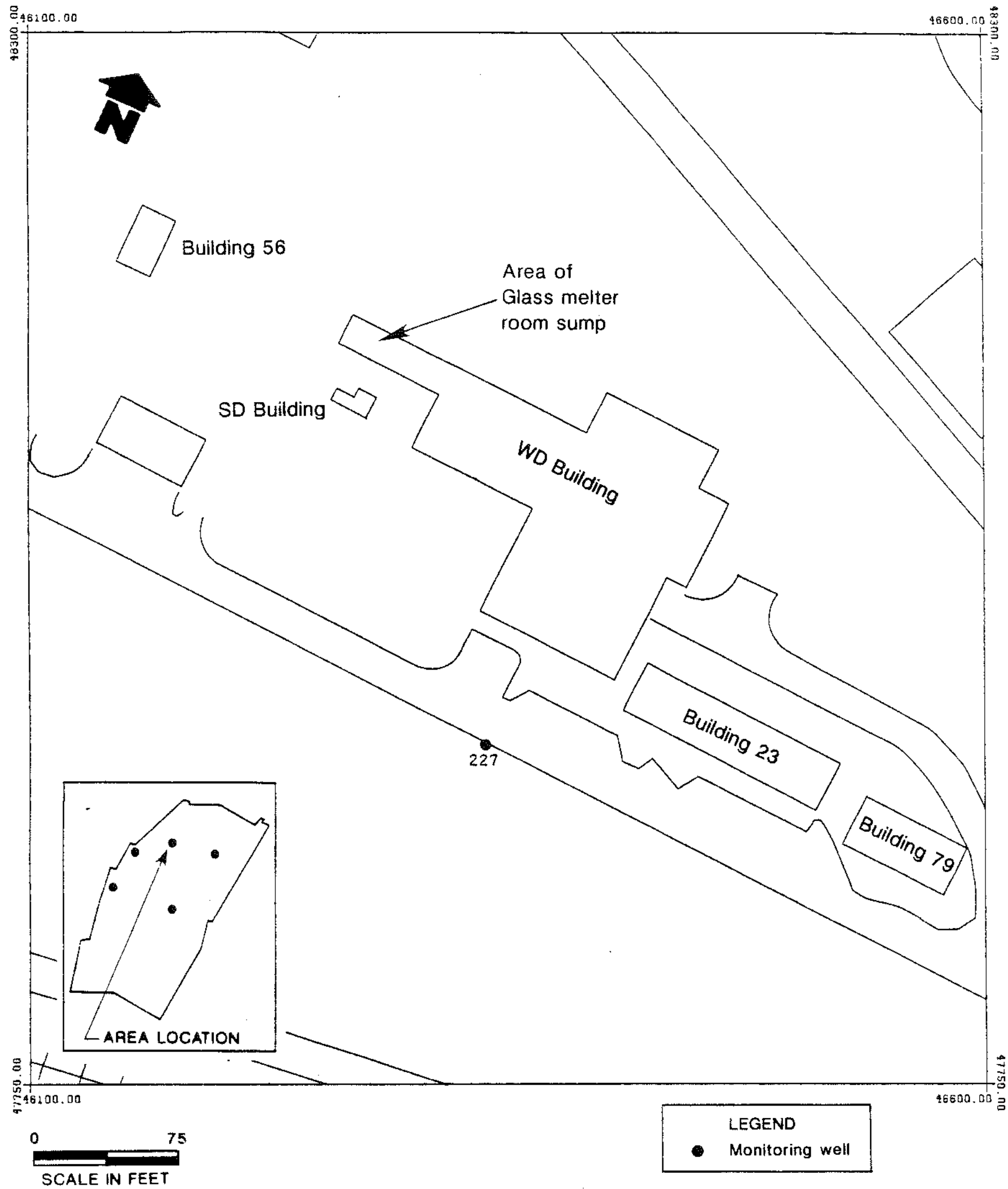

Figure 13.1. Glass melter room sump.

13.3. FIELD INVESTIGATION

13.3.1. Sample Objectives and End Use Of Data

The objective of investigating the glass melter room sump is to determine if hazardous constituents are present. If hazardous contaminants are present in any of the samples from this limited field investigation, a more extensive remedial investigation may be performed.

13.3.2. Sampling Locations

One sediment sample will be collected from the sump. One sample is considered sufficient because of the relatively small size of the sump (4-ft diameter) and because it is believed that the sump contents are homogeneous.

depth of sample? No compositing of VOCs

13.3.3. Sediment Sample Collection Protocol

The sediment sample will be collected from the glass melter room sump. The sample will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and HMX, RDX, and PETN explosives. A total of 1,350 mL is required:

- 60 mL of sediment in an amber glass container for TCL VOCs;
- 500 mL of sediment in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;
- 250 mL of sediment in an amber glass container for RDX, HMX, and PETN explosives;
- 500 mL of sediment in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL of sediment in a glass for screening by the analytical laboratory.

The 60 mL of soil necessary for the TCL VOC analysis will be collected and containerized, immediately followed by the collection and containerizing of the 1,310 mL of soil needed for the remaining analysis.

The sump sample will be collected using a stainless steel spoon or bucket according to ER Program SOP 5.2, Sampling with a Spade and Scoop (revision 2) (DOE 1988). Because only one sample is being collected, no quality control samples will be collected or used. The quality control data obtained from the other areas sampled on the same day as the sump will provide the necessary quality control information.

Unit No.: MI-14

Unit Name: Building 27 Concrete Flume

Unit Description: The Building 27 Concrete Flume is located on the south side of Building 27. It was formerly used to convey wastewater from the building to the Building 27 Sump (SWMU SU-3). Since the sump was abandoned, the wastewater in the Concrete Flume has been pumped into drums at the Building 27 Solvent Storage Area (SWMU CS-12). The Concrete Flume is approximately 20 feet long, 10 inches wide, and 12 inches deep. The capacity of the flume is approximately 100 gallons. Its bottom and sidewalls are constructed of concrete and it is covered with a metal lid (Ref. 84).

Date of Start-up: Early 1960s (Ref. 84).

Date of Closure: The flume is still in service.

Wastes Managed: The wastewater discharged into the Concrete Flume from Building 27 contains acetone, ethanol, and dissolved explosives (Ref. 84).

Release Controls: The sidewalls and bottom of the flume are constructed of concrete. If overfills occur, the wastewater will drain into the Building 27 Sump located just downstream of the flume. Wastewater is pumped from the flume into drums twice a day. There is no curbing or diversionary structures to prevent building runoff from entering the flume during heavy rainfall.

History of Releases: There were no releases from the flume noted in the file information or observed during the VSI. The flume was observed to be nearly full of wastewater and the integrity of the concrete could not be determined.

Conclusions: Soil/Groundwater: There is a low potential for release to soil and groundwater. The integrity of the concrete could not be determined but the wastewater in the flume could flow and be released through the seams between the concrete and asphalt.

Surface Water:	The potential for release to surface water is low. Rainfall runoff and flume overfills would drain to the adjacent sump. Drain lines from the sump to the Plant Drainage Ditch and the Building 27 Leach Pit have been abandoned and sealed shut.
Air:	There is a moderate potential for release to the air since the top of the flume is not completely closed. Volatile emissions from the solvents may be released.
Subsurface Gas:	The potential for generation of subsurface gas is unknown since the integrity of the concrete could not be determined.

14. BUILDING 27 CONCRETE FLUME

14.1. SITE HISTORY

14.1.1. Description of Building 27 Concrete Flume

Building 27 is located south of the Main Hill and southeast of the Sewage Disposal Building area (Figures 1.3 and 14.1). The concrete flume is located on the south side of Building 27. It was formerly used to convey wastewater from inside the building to the sump (Kearney 1988). Since the sump was abandoned, the wastewater in the concrete flume has been pumped into drums at the Building 27 solvent storage area.

thickness

The flume is an in-ground structure measuring is approximately 20 ft long, 10 inches wide, and 12 inches deep. The capacity of the flume is approximately 100 gallons. The bottom and sidewalls of the flume are constructed of concrete, and it is covered with a metal lid (Kearney 1988). If overflows occur, the wastewater will drain into the Building 27 sump located downstream of the flume. The flume is still in service; wastewater is pumped from the flume into drums twice daily.

- if there were cracks in the flume where would the water go? How thick are the walls. when was it inspected

14.1.2. Potential Building 27 Concrete Flume Contaminants

The wastewater discharged in the past into the concrete flume from Building 27 may have contained unknown quantities of acetone, ethanol, and dissolved explosives (Kearney 1988).

14.2. EXISTING SITUATION

Soil Gas Results

Soil gas samples were taken at three locations in the area of the Building 27 concrete flume in June 1987 as part of the Area B Operable Unit investigation (Figure 14.1). The samples were analyzed for trichloroethene, 1,2-*trans*-dichloroethene, chloroethene, toluene, benzene, and ethylbenzene. There were no contaminants detected at locations 51 and 52. The following concentrations of compounds were detected at location 56:

- 0.01 μg/L of trichloroethene,
- 0.13 μg/L of benzene, and
- 0.01 μg/L of toluene.

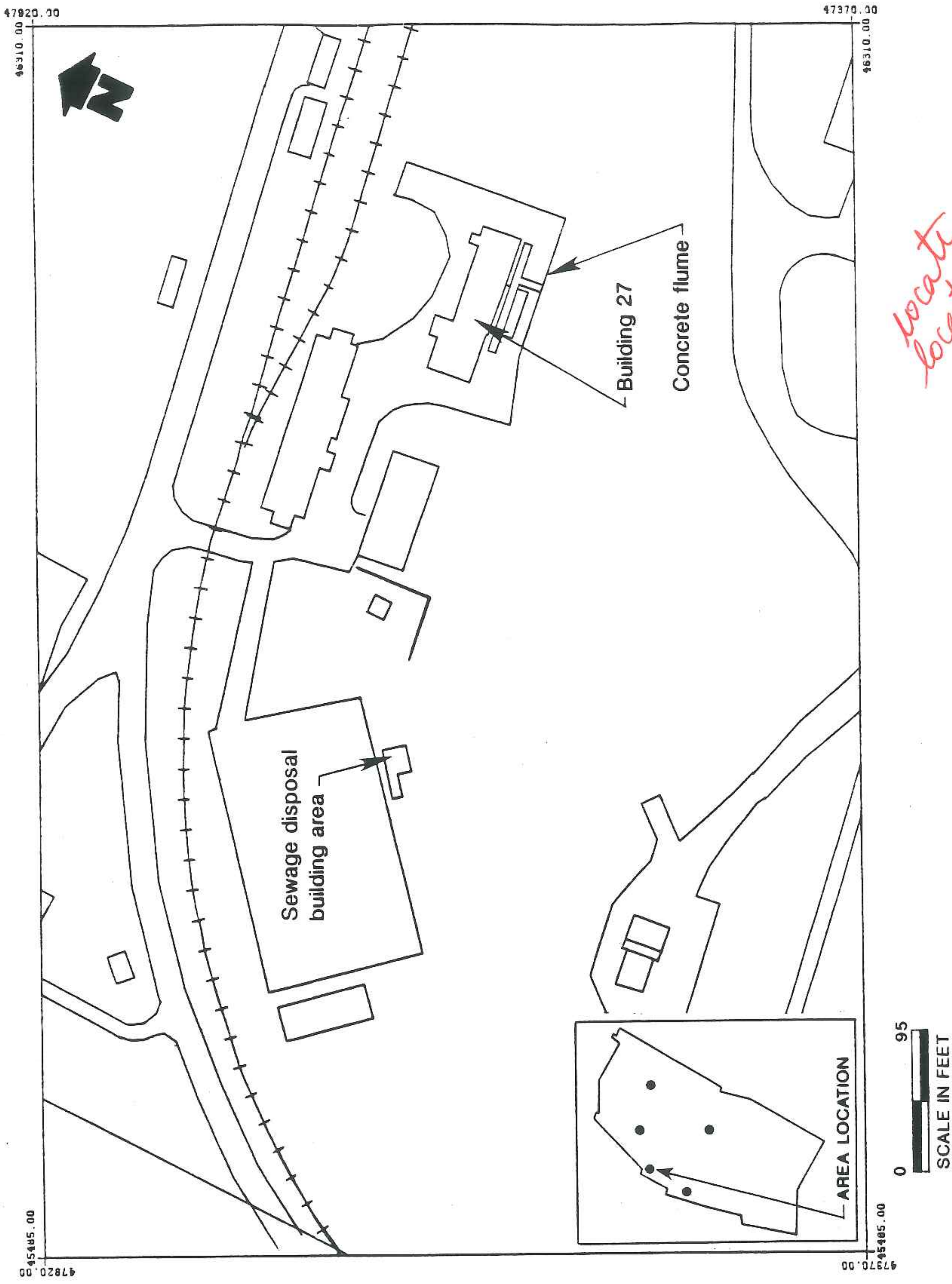

Figure 14.1. Building 27 concrete flume.

locate locations 51, 52 & 56 on map.

14.3. FIELD INVESTIGATION

14.3.1. Sampling Objectives and End Use of Data

The objective of this limited field investigation at the Building 27 concrete flume is to determine whether releases of hazardous constituents have occurred because of cracks in the concrete bottom and sidewalls of the flume. If cracks are present in the concrete, the underlying soil will be sampled. If the underlying soil is found to contain hazardous constituents, a more extensive remedial investigation may be performed.

14.3.2. Flume Integrity Investigation

The entire length of the flume outside Building 27 will be examined for possible cracks. The steel plate covering the flume will be temporarily removed and a field technician will examine the flume. If the flume is cracked, a surface soil sample or samples will be collected immediately adjacent to the cracked section.

(need to be deeper than surface soil.

14.3.3. Soil Sample Collection Protocol

If soil samples from below the invert of the flume are collected at the Building 27 concrete flume, they will be single samples. Each sample will be analyzed for TCL/TAL VOCs, semivolatile organics, metals, PCBs/pesticides, and HMX, RDX, and PETN explosives. A total of 1,350 mL is required for each sample:

- 60 mL of soil in an amber glass container for TCL VOCs;
- 500 mL of soil in an amber glass container for TCL/TAL metals, semivolatile organics, and PCBs/pesticides;
- 250 mL of soil in an amber glass container for HMX, RDX, and PETN explosives;
- 500 mL of soil in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL of soil in a glass vial for screening by the analytical laboratory.

The sample or samples will be collected according to ER Program SOP 5.2, Sampling with a Spade and Scoop (revision 2) (DOE 1988). No quality control samples will be collected.

54. Unit Information:

A. Unit Name: Thermal Treatment Unit (= Bob's Drum Incinerator)
Period of Operation: Unknown
Waste Type: D003 explosive wastes including contaminated trash, components and assemblies, bulk high explosive powder (PETN, PBX, RDX, HMX, and Tetryl), mild detonating cord and mild detonating fuses, pyrotechnic powders and trash, hexanitrostilbene (HNS) wastes, 2-[5-cyanotetrazolato] pentramine cobolt (III) perchlorate (CP) wastes, Thermite powder wastes, and solid primary explosives (Ref. 66).
Hazardous Constituents: Unknown
Regulatory Status: RCRA permit sought

B. Unit Description: This unit is located in the Burn Area and it consists of a 55-gallon drum inside a base containing water and antifreeze. Wastes are placed in the drum and detonated remotely from Building 13. Control instruments in the building regulate a blower which provides air to the unit. The unit is operated periodically on a batch basis. The unit is located in a 10 by 10 by 10 foot cubicle with 4-inch thick steel-plate sand-filled walls and an open expanded metal screen roof. Temperature and opacity are monitored every few minutes while the unit is in operation (Ref. 66, pp. 10-7, 10-10).

Additional Information Needed:

1. Waste analysis
2. Disposition of ash residue
3. Waste and ash quantities
4. Dates of operation
5. Waste management description

Unit No.:	OB-2
Unit Name:	Thermal Treatment Unit
Unit Description:	The Thermal Treatment Unit is an active unit operated on a batch basis in the Open Burn Area. It consists of a 55-gallon drum located inside a 10-foot by 10-foot by 10-foot concrete cubicle covered with a metal screen roof. The concrete walls are lined with 4-inch thick steel plate. The floor of the cubicle is constructed of sand. Wastes are detonated remotely from an adjacent building. Temperature and opacity of each burn are also monitored from the building (Ref. 66, pp. 10-7, 10-10). The drum is mounted on fire brick and cooled during the burn by a surrounding base filled with water and antifreeze. The temperature of the burning wastes is increased by a fan which swirls the air inside the drum (Ref. 66).
Date of Start-up:	1968.
Date of Closure:	The unit is still in service.
Wastes Managed:	The Thermal Treatment is used to burn explosive wastes including contaminated trash, components and assemblies, bulk high explosive powder (PETN, PBX, RDX, HMX, and tetryl), mild detonating cord and mild detonating fuses, pyrotechnic powders and trash, hexanitrostilbene (HNS) wastes, 2-[5-cyanotetrazolato] pentramine cobolt (III) perchlorate (CP wastes), thermite powder wastes, and solid primary explosives (Ref. 66).
Release Controls:	The walls of the unit confine uncombusted waste to the area within the cubicle. The screen over the cubicle prevents large particulates from discharging over the walls. No soil release controls were observed during the VSI.
History of Releases:	During the VSI, the Thermal Treatment Unit was not being operated. Some waste residue was noted outside the metal drum inside the cubicle.
Conclusions:	Soil/Groundwater: The potential for release to soil and groundwater is moderate. There was

residue noted on the sand bottom of the cubicle during the VSI. The release potential is minimized since most wastes should be destroyed during detonation and residue should be relatively inert.

Surface Water: The release potential to surface water is low due to the small amount of residue on the ground and since the unit is more than 400 feet from the Plant Drainage Ditch.

Air: During operation, combustion emissions are released directly to the atmosphere without treatment or monitoring.

Subsurface Gas: The potential for generation of subsurface gas is low from this above-ground unit. This potential is minimized since most wastes should be destroyed during detonation and residue should be relatively inert.

15. THERMAL TREATMENT UNIT

15.1. SITE HISTORY

15.1.1. Description of Thermal Treatment Unit

The thermal treatment unit is located east of Building 90 on the SM/PP Hill (Figures 1.3 and 15.1). The thermal treatment unit is an active unit operated on a batch basis in the open burn area. The unit consists of a 55-gallon drum located inside a 10-ft by 10-ft by 10-ft concrete cubicle, covered with a metal screen roof. The concrete walls are lined with 4-inch-thick steel plate. The floor of the cubicle is covered with sand. Wastes are detonated remotely from an adjacent building. The drum is mounted on fire brick and cooled during the burn by a surrounding base filled with water and antifreeze.

15.1.2. Potential Thermal Treatment Unit Contaminants

Explosive wastes are burned in the thermal treatment unit. The wastes include contaminated trash, components and assemblies, bulk high-explosives powder (PETN, PBX, RDX, HMX, and tetryl), mild detonating cord and fuses, pyrotechnic powders and trash, hexanitrostilbene wastes, 2-[5-cyanotetrazolato] pentraamine cobalt (III) perchlorate wastes, thermite powder wastes, and solid primary wastes (Kearney 1988). There have been no soil gas surveys performed in this area and there are no monitoring wells in the vicinity of the unit.

15.2. FIELD INVESTIGATION

15.2.1. Sampling Objectives and End Use of Data

The objective of sampling at the thermal treatment unit is to identify hazardous contaminants that may be present in the waste residue or that may have been released to the surrounding soils. If hazardous contaminants are present in any of the samples from this limited field investigation, a more extensive remedial investigation may be performed.

15.2.2. Sampling Locations

The ash and debris inside the drum will be sampled. The samples will be analyzed for TCL/TAL metals, and PETN, RDX, PBX, and HMX explosives. The samples are not being analyzed for the other TCL constituents because the presence of other possible contaminants in this process is unlikely, and because the detonation of the wastes would have resulted in the destruction of any VOCs, semivolatile organics,

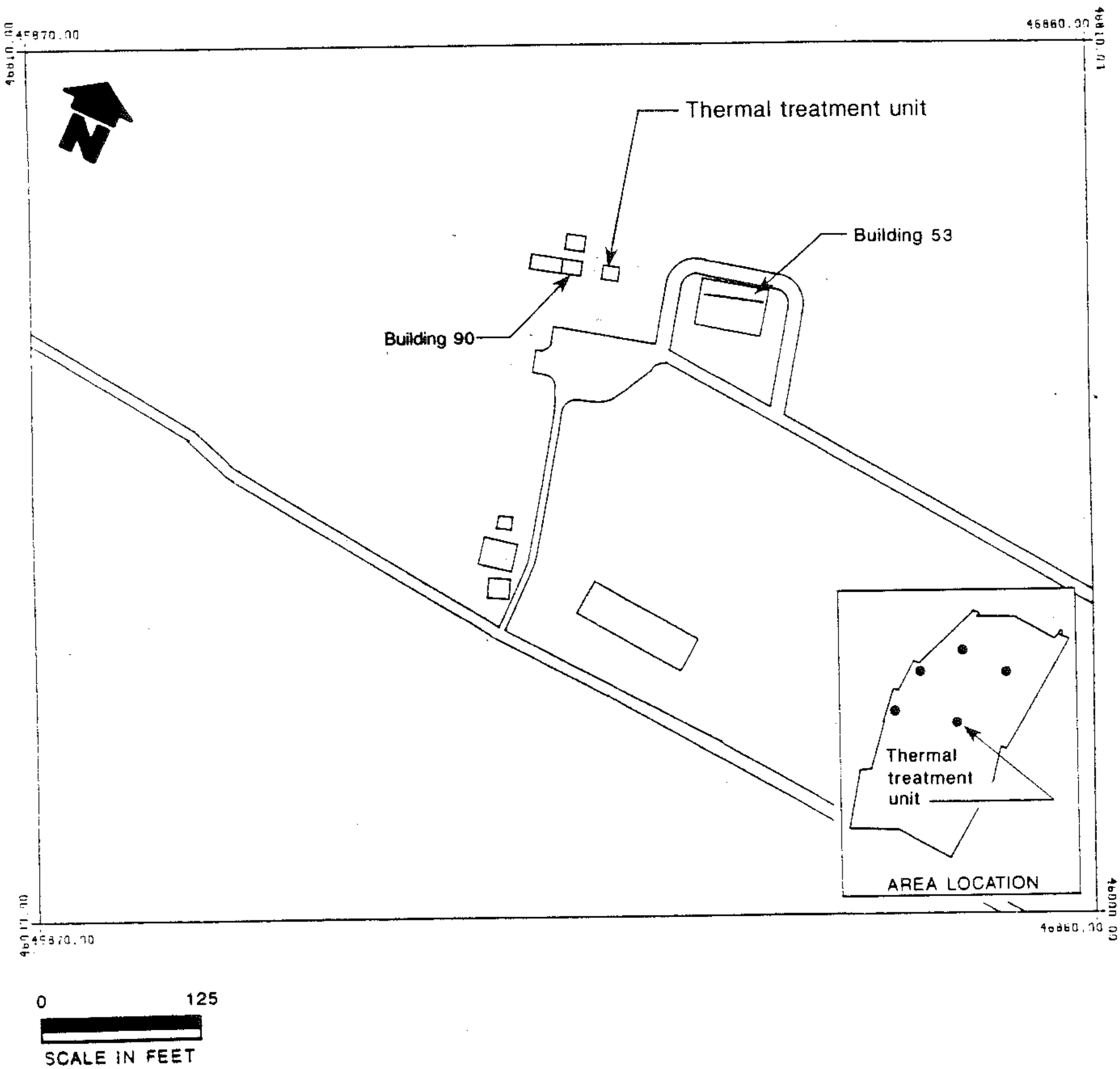

Figure 15.1. Thermal treatment unit.

and pesticides/PCBs that were present. Two surface soil samples will be taken of the soil adjacent to the drum/concrete pad. The locations of these samples will be chosen in the field. If there is evidence of ash or stained soil, the area or areas will be sampled.

(depth? what about down grad. if no stained soil is present.

15.2.3. Sampling Activities

Table XV.1 gives the thermal treatment unit sampling specifications.

15.2.4. Soil Sample Collection Protocol

The ash/debris or soil samples collected at the thermal treatment unit will be discrete samples; two surface soil samples will be collected from the adjacent soil, and one sample will be collected from the ash/debris in the 55-gallon drum. A duplicate sample will also be collected of the ash.

The ash/debris and soil samples collected at the thermal treatment unit will be analyzed for TCL/TAL metals and HMX, RDX, PETN, and PBX explosives. One ash/debris sample (large enough to split for a duplicate) and two surface soil samples will be collected. A total of 1,290 mL is required for each sample:

- 500 mL in an amber glass containers for TCL/TAL metals;
- 250 mL in an amber glass for HMX, RDX, PBX, and PETN explosives;
- 500 mL in a container provided by Mound Plant Soil Screening Facility for radioactivity screening; and
- 40 mL in a glass vial for screening by the analytical laboratory.

Table XV.1. Sampling Specifications for the Thermal Treatment Unit

Environmental Samples

Ash/Debris in Drum[a]

Number: 2 (original and a duplicate)
Analytical Parameters: TCL/TAL metals, PETN, RDX, PBX, and HMX explosives.

Surface Soil Samples[a]

Number: 2
Depth: 0 to 6 inches
Analytical Parameters: TCL/TAL metals, PETN, RDX, PBX, and HMX explosives.

- depth not adequate.

Field Quality Control Samples

Rinsate Blanks

Number: 1
Analytical Parameters: TCL/TAL metals, PETN, RDX, PBX, and HMX explosives.

Field Duplicates[b]

Number: 1 of ash/debris in drum
Analytical Parameters: TCL/TAL metals, PETN, RDX, PBX, and HMX explosives.

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[a]The ash/debris and surface soil samples will be collected according to ER Program SOP 5.2, Soil Sampling with Spade and Scoop (revision 2) (DOE 1988). The samples will be lithologically described by a geologist, and any stains or discolorations will be noted.

[b]A field duplicate will be collected from the ash/debris in the drum. The duplicate will be analyzed for TCL/TAL metals, HMX, RDX, PETN, and PBX explosives. For this sample only, a total of 2,040 mL is needed to split the sample to form a duplicate.

27. Unit Information:

A. Unit Name: Spoils Area

Period of Operation: Date of start-up - first quarter of 1985 (Ref. 55).

Waste Type: Unknown

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: This unit is located on the west central portion of the facility. The first of three cells was constructed in 1985. Total disposal capacity of the unit is 350,000 yd^3 (Ref. 55, V-10).

Additional Information Needed:

1. Dimensions
2. Status of Cells 2 and 3
3. Analysis of wastes
4. Release controls

Unit No.:	LF-3
Unit Name:	Spoils Disposal Area
Unit Description:	The Spoils Disposal Area is located just south of the Lined Landfill (SWMU LF-1) near the southwest corner of the facility. Its dimensions are approximately 300 feet by 300 feet and 10 feet deep (Ref. 84). The unit is composed of three cells with a total capacity of 350,000 cubic yards (Ref. 55, p. V-10). Wastes are dumped onto the landfill surface and graded.
Date of Start-up:	1985 (Ref. 55).
Date of Closure:	The Spoils Disposal Area is still active.
Wastes Managed:	The materials disposed in the unit is limited to uncontaminated soil and concrete from construction areas at the DOE-Mound facility. Facility representatives indicated there is no reason to suspect the presence of hazardous constituents in this unit (Ref. 84). There is no waste analysis available.
Release Controls:	A ditch has been constructed around the Spoils Disposal Area to prevent rainfall runon from contacting the disposed materials. The unit is graded slightly to the west with no cover or vegetation (Ref. 84). There are no other release controls associated with this unit.
History of Releases:	There were no releases reported in the file information or observed during the VSI. The disposal area is located within the 100-year floodplain of the Great Miami River (Ref. 93).
Conclusions:	The potential for release to soil, groundwater, surface water, air, and generation of subsurface gas is low since no known hazardous constituents are disposed in the landfill.

16. SPOILS DISPOSAL AREA

16.1. SITE HISTORY

16.1.1. Description of Spoils Disposal Area

The spoils disposal area is located just south of the site sanitary landfill near the southwest corner of the facility (Figure 16.1). The area is still active and is composed of three cells with a total capacity of 350,000 yd^3.

- is concrete tested or from buildings that do not handle H_2O or rad. waste?

The materials placed in the area are limited to uncontaminated soil and concrete from construction areas at the Mound Plant. Plant representatives indicated there is no reason to suspect the presence of hazardous constituents in this unit (Kearney 1988). All soils removed during construction are screened for plutonium by Mound Plant personnel prior to deposition at the disposal area. No releases were reported or observed during the visual site inspection (Kearney 1988).

16.1.2. Potential Spoils Disposal Area Contaminants

Only uncontaminated soil and concrete are placed in the spoils disposal area; therefore, the potential for contamination is low.

16.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential contaminants have been identified. No additional sampling is required for scoping.

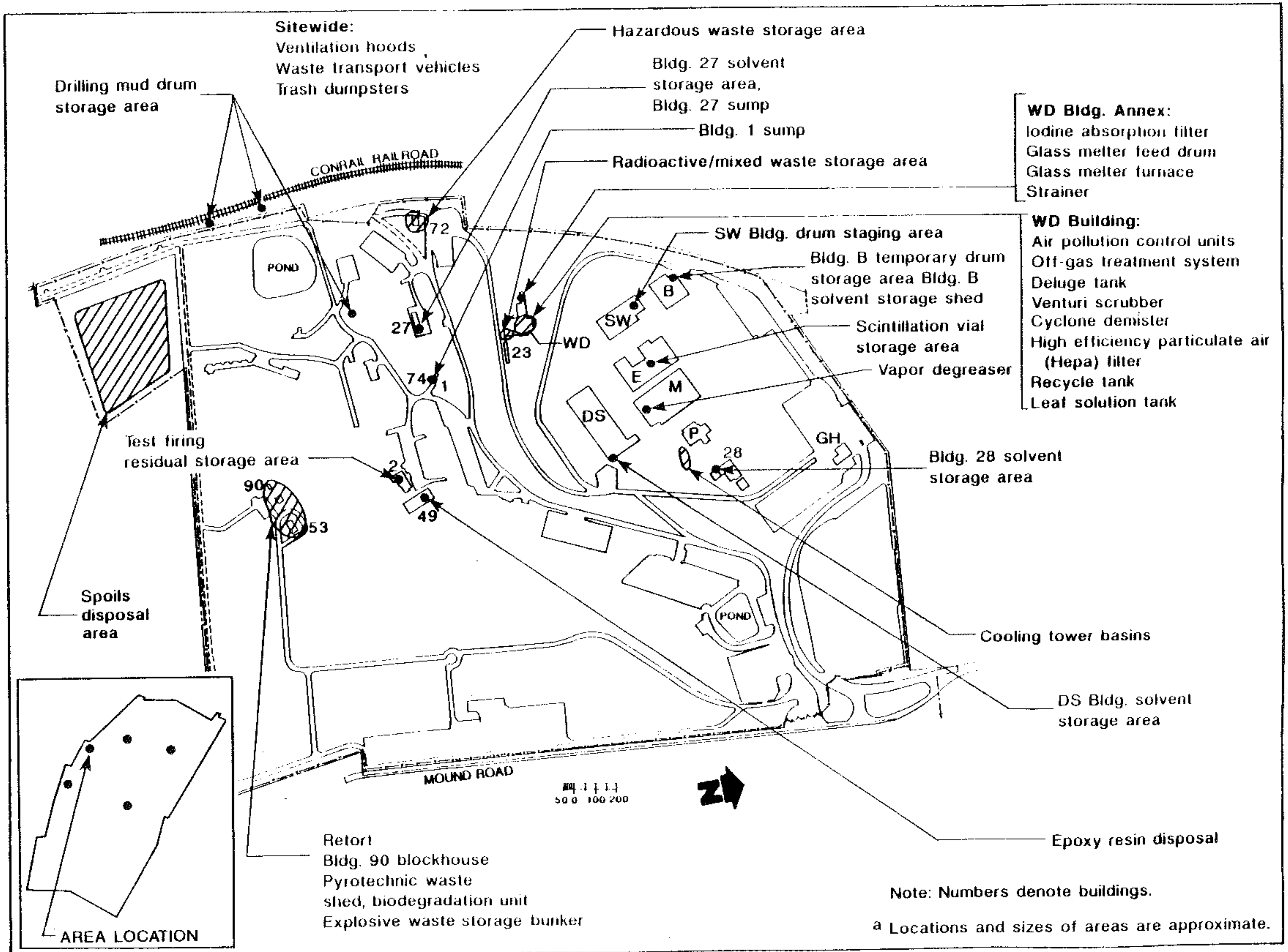

Figure 16.1. Additional RCRA sites with no further sampling planned.[a]

Unit No.:	CS-1
Unit Name:	Scintillation Vial Storage Area
Unit Description:	The Scintillation Vial Storage Area is located in Building E, Room 143 and consists of two metal drums filled with scintillation vials. The vials were closed plastic containers with approximately volumes of 40 to 250 ml. The metal containers are approximately 20 gallons each and have metal covers. The vials contain scintillation liquid composed of solvent and radioactive particles. When the metal containers are filled, they are transferred to the Radioactive/Mixed Waste Storage Area (SWMU CS-9) (Ref. 84).
Date of Start-up:	Unknown.
Date of Closure:	The unit is still in operation.
Wastes Managed:	The scintillation liquid is composed of radioactive trimethylbenzene cocktail. The level of radioactivity is classified as low level (<50uCi/l) or high level (>50 uCi/l) (Ref. 84).
Release Controls:	The vials are completely closed plastic containers which are placed in a covered metal drum. The drums are located inside Building E on a concrete floor slab. When the metal containers are filled with vials, they are brought to the Radioactive/ Mixed Waste Storage Area (Ref. 84). Air releases are discharged from the building through the Ventilation Hoods (SWMU AP-11).
History of Releases:	There were no releases noted in the file information or observed during the VSI. The area was observed to be clean and there was no evidence of past spills. A slight solvent odor was detected (Ref. 84).
Conclusions:	<u>Soil/Groundwater</u>: There is no potential for release to soil and groundwater since double containment is provided for the scintillation cocktail. The unit is located indoors and is underlain by a concrete floor further eliminating the potential for wastes to contact the soil. In

the event that a spill occurred, the volume of released material would be small and could be collected on the floor of the unit.

<u>Surface Water</u>: There is no potential for releases to surface water. The unit is located indoors over a concrete floor. In the event that material was released from the metal containers, the volume of such a spill would be small and could be recovered on the floor of the unit.

<u>Air</u>: There was a slight odor in the room during the VSI. The air releases are discharged to the atmosphere via the Ventilation Hoods in Room 143. The potential for large air releases is low due to the double containment offered by the unit and due to the small volumes of liquid stored in each container.

<u>Subsurface Gas</u>: There is no potential for generation of subsurface gas from this indoor, above-ground unit.

17. SCINTILLATION VIAL STORAGE AREA

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17.1. SITE HISTORY

17.1.1. Description of Scintillation Vial Storage Area

The scintillation vial storage area is located in Building E, Room 143, and consists of two metal drums filled with scintillation vials (Figure 16.1). The vials are closed plastic containers with approximate volumes of 40 to 250 mL. The metal drums have approximate volumes of 75 L. The vials contain scintillation liquid composed of solvent and radioactive particles. The area is still in operation.

The scintillation liquid is composed of radioactive trimethylbenzene cocktail. The level of radioactivity varies from low level (<50 μCi/L) to high level (>50 μCi/L). Liquid scintillation is used to count low-energy radiation, such as is emitted from carbon-14 and tritium.

The vials are in completely closed plastic containers that have been placed inside a metal drum to provide double containment. The drums are located inside Building E on a concrete floor slab. Potential air releases would be discharged from the building through ventilation hoods. No releases have been documented nor were they observed during the visual site inspection. The area was observed to be clean, and there was no evidence of past spills (Kearney 1988).

17.1.2. Potential Scintillation Vial Storage Area Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the scintillation vial storage area.

17.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

Unit No.: CS-3

Unit Name: Building 28 Solvent Storage Area

Unit Description: This solvent storage area consists of two 55-gallon drums located on a concrete pad on the west side of Building 28. Waste solvent is pumped from inside the building to the drums automatically. Filled drums are transferred from this unit to the Hazardous Waste Storage Area (SWMU CS-7) (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The unit is still active.

Wastes Managed: The drums present in the storage area contained waste solvents and were marked "Flammable Liquid N.O.S" (Ref. 84).

Release Controls: The drums were covered with sealed lids and the lines discharging solvents into the drums were equipped with automatic shut-off devices. Two sides of the concrete pad were protected with a sheet metal barrier. There was no curbing or other controls to contain releases from the unit (Ref. 73, p. 3-58).

History of Releases: There were no releases noted in the file information or observed during the VSI.

Conclusions: <u>Soil/Groundwater</u>: The potential for release to soil and groundwater is low due to the filling controls on the drums. In the event that a drum were tipped in this area, there would be a high potential for release since there are no secondary containment devices at this unit.

<u>Surface Water</u>: The potential for release to surface water is low due to the filling controls on the drums. In the event that a drum were tipped in this area, the potential for release

to surface water is moderate since there are no secondary containment structures at the unit.

Air: The drums in this unit are sealed shut and, therefore, the potential for releases to the air is low.

Subsurface Gas: There is no potential for generation of subsurface gas from this above-ground unit.

18. BUILDING 28 SOLVENT STORAGE AREA

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18.1. SITE HISTORY

18.1.1. Description of Building 28 Solvent Storage Area

This solvent storage area consists of two 55-gallon drums located on a concrete pad on the west side of Building 28 (Figure 16.1). Two sides of the concrete pad are protected with a sheet metal barrier. Waste solvent is automatically pumped from inside the building to the drums. The drums are still active and are covered with sealed lids. The drums located in the storage area contain a variety of waste solvents and are labeled "Flammable Liquid N.O.S." The lines discharging solvents into the drums are equipped with automatic shutoffs.

18.1.2. Potential Building 28 Solvent Storage Area Contaminants

No releases have been documented or observed during a visual site inspection (Kearney 1988).

18.2. FIELD INVESTIGATION

The RFA recommended no further action other than considering secondary containment (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

62. Unit Information:

A. Unit Name: DS Solvent Storage Shed
Period of Operation: Unknown
Waste Type: Solvents
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This storage area is located in close proximity to storm or floor drains which could provide a release pathway to underlying soil. There is no curbing or other diversionary structures to prevent spilled material from leaving the area (Ref. 73, p. 3-58).

Additional Information Needed:

1. Location
2. Material of construction
3. Regulatory status
4. Period of operation
5. Waste types
6. Hazardous constituents
7. History of releases
8. Source of wastes
9. Method of waste disposal

Unit No.: CS-4

Unit Name: DS Building Solvent Storage Shed

Unit Description: The DS Building Solvent Storage Shed is a fully enclosed structure used to house 55-gallon drums of waste solvent from the DS Building. The shed is located on the east side of the DS Building. The shed also contains product-grade solvent to be used in the building. The dimensions of the shed's concrete floor are approximately 10 feet by 10 feet with a 12-foot ceiling. Waste solvent is pumped from inside the building to the drums in the shed through an automatic discharge hose. Filled drums are transferred from the shed to the Hazardous Waste Storage Area (SWMU CS-7).

Date of Start-up: Unknown.

Date of Closure: The unit is still in operation.

Wastes Managed: The 55-gallon drums contain waste solvent (D001) used in the DS Building.

Release Controls: The shed is a fully enclosed structure which prevents exposure of the drums from sunlight and precipitation. The concrete floor of the shed is curbed and covered with a metal grate. The shed is equipped with a fan for ventilation. Automatic shut-off devices are part of the drum filling equipment. There is a sealed drain in the concrete floor which, according to facility representatives, has an unknown point of discharge (Ref. 84). Until the past year, the storage shed had no curbing or other diversionary structures to contain spills. It was also reported that a storm drain was located near the shed (Ref. 73, p. 3-58).

History of Releases: There were no releases reported in the file information or observed during the VSI. The reason for blocking the floor drain is not known.

Conclusions: Soil/Groundwater: The potential for releases to soil and groundwater is low due to the secondary containment offered by the concrete floor and curbing in the shed. No past releases were reported; however, past releases may have occurred from the unit to adjacent soil when there were no secondary containment structures. No past releases were reported, however.

<u>Surface Water</u>: There is no present potential for release to surface water since floor drain has been sealed. Any released liquids would be collected in the curbed floor of the shed. No releases were reported; however, past releases to the Plant Drainage Ditch may have occurred through the now abandoned floor drain. No releases were reported, however.

<u>Air</u>: Since the drums in the solvent shed are sealed shut the potential for release to the air is low.

<u>Subsurface Gas</u>: The potential for generation of subsurface gas is low from this indoor, above-ground unit.

19. DS BUILDING SOLVENT STORAGE SHED

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19.1. SITE HISTORY

19.1.1. Description of DS Building Solvent Storage Shed

The DS Building solvent storage shed is a fully enclosed structure used to house 55-gallon drums of waste solvent from the DS Building. The shed is still in operation and is located on the east side of DS Building (Figure 16.1). The shed also contains product-grade solvent to be used in the building. The dimensions of the shed's concrete floor are approximately 10 ft by 10 ft, with a 12-ft ceiling. Waste solvent is pumped from inside the building to the drums in the shed through an automatic discharge hose.

The shed is a fully enclosed structure that prevents exposure of the drums to sunlight and precipitation. The concrete floor of the shed is curbed and covered with a metal grate. The shed is equipped with a fan for ventilation. Automatic shutoffs are part of the drum-filling equipment. There is a sealed drain in the concrete floor with an unknown point of discharge (Kearney 1988). There is no evidence of releases.

19.1.2. Potential DS Building Solvent Storage Shed Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the DS Building solvent storage shed

19.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

Unit No.:	CS-5
Unit Name:	Building B Solvent Storage Shed
Unit Description:	The Building B Solvent Storage Shed is a fully enclosed structure located on the east side of Building B. It is used to store 55-gallon drums of waste solvent generated in Building B. The dimensions of the shed are approximately 200 feet by 10 feet with a 12-foot high ceiling. During the VSI, the shed was undergoing reconstruction and all drums were stored outside in the Building B Temporary Drum Storage Area (SWMU CS-15). Waste is normally pumped from inside the building to the drums in the shed through an automatic discharge hose. Filled drums are transferred to the Hazardous Waste Storage Area (SWMU CS-7).
Date of Start-up:	Unknown.
Date of Closure:	The shed is still in operation.
Wastes Managed:	The shed houses drums designated for containing waste solvents (D001) (Ref. 84).
Release Controls:	The shed is a fully enclosed structure which prevents exposure of the drums from sunlight and precipitation. The concrete floor is curbed and covered with a metal grate. Each of the discharge lines to the drums is equipped with an automatic shut-off device to prevent overfills. A drain present in the concrete floor formerly connected to the plant's storm sewer has been sealed. Until the past year, the storage shed had no curbing or other structures to contain spills (Ref. 73, p. 3-58).
History of Releases:	There were no releases noted in the file information or observed during the VSI. Facility representatives were also not aware that any past releases had occurred from this unit (Ref. 84).
Conclusions:	<u>Soil/Groundwater</u>: The potential for releases to soil and groundwater is low due to the secondary containment provided by the concrete floor and curbing in the shed. Past releases may

have occurred from the unit to adjacent soil when there were no secondary containment structures. No past releases were reported, however.

<u>Surface Water</u>: The potential for release to surface water is low since the floor drain has been sealed. There is a moderate to high potential for past releases, if they occurred, to be released to surface water since the floor drain was connected to the plant's storm sewer system.

<u>Air</u>: Since the drums in the solvent storage shed are sealed shut the potential for release to the air is low.

<u>Subsurface Gas</u>: The potential for generation of subsurface gas is low from this indoor, above-ground unit.

20. BUILDING B SOLVENT STORAGE SHED

20.1. SITE HISTORY

20.1.1. Description of Building B Solvent Storage Shed

The Building B solvent storage shed is a fully enclosed structure located on the east side of Building B (Figure 16.1). The shed is still in operation and is used to store 55-gallon drums of waste solvents generated in Building B. Waste solvents are pumped from inside the building to the drums through a discharge hose equipped with an automatic shutoff.

The shed is fully enclosed and the concrete floor is curbed and covered with a metal grate. Curb structures were installed within the past year. The discharge lines from the building to the drums are equipped with automatic shutoffs. A floor drain, formerly connected to the plant sewer system, has been sealed. There is no evidence of releases.

20.1.2. Potential Building B Solvent Storage Shed Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the Building B solvent storage shed.

20.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

- any soil gas done in the area?
- What do the GWMW in the area say?
- possibility of releases when no curbing existed? Any data avail?

Unit No.: CS-7

Unit Name: Hazardous Waste Storage Area

Unit Description: The Hazardous Waste Storage Area is an enclosed storage area located in Building 72 near the western edge of the Mound facility boundary. The building is enclosed on three sides with metal walls and is covered with a metal roof. The dimensions of the building floor are 60 feet by 40 feet (Ref. 37). Drums are stored on a metal grate which covers the curbed, concrete floor. Drums are also stored outside on a curbed asphalt pad at the Outdoor Hazardous Waste Storage Area (SWMU CS-13) and the Empty Drum Storage Area (SWMU CS-14). The asphalt pad is sloped to two catch basins on the east side of Building 72 which collect storm runoff and discharge it to the Plant Drainage Ditch (SWMU MI-1). Wastes generated at several DOE Mound locations are picked up by a Waste Transport Vehicle (SWMU MI-4) and transported to the Hazardous Waste Storage Area as required. During the VSI, 35- and 55-gallon drums were stacked two drums high outside on wooden pallets and singly inside the building on the metal grates. Metal and plastic drums were observed in this unit during the VSI (Ref. 84).

Date of Start-up: 1986 (Ref. 4).

Date of Closure: The unit is still in service.

Wastes Managed: Wastes stored in the Hazardous Waste Storage Area includes combustible and flammable liquids and waste oils (Ref. 37), solvent-containing wastes, ignitable wastes, plating wastes, photo processing wastes, polymeric wastes, and toxic wastes (Ref. 66, p. 4-3). EPA listed wastes include: D001, D002, D004, D005, D006, D007, D008, D009, D010, D011, F002, F003, F004, F005, F007, F008, F009, U158 (Ref. 37).

Release Controls: The Hazardous Waste Storage Area consists of an enclosed building to protect waste containers from exposure to the sunlight and precipitation. The floor of the building consists of three concrete bays which are curbed and sloped to confine spills of hazardous waste to the building. All drums in the building rest on metal grates which are supported by each bay's concrete curbing. Release controls for drums stored outside the building include a curbed asphalt pad which is sloped to two catch basins. Runoff inside the pad is discharged from the catch basin to the Plant Drainage Ditch (Ref. 84).

History of Releases: There were no releases from the Hazardous Waste Storage Area noted in the file information. During the VSI, stains indicating past releases were noted near the northeast corner of the asphalt pad outside the building. The stains appeared to emanate from the Empty Drum Storage Area (SWMU CS-14). Stains were also noted near the waste oil drums in the Outdoor Hazardous Waste Storage Area (SWMU CS-13) on the east side of the building. The drums inside or outside the building were not observed to be leaking during the VSI.

Conclusions:

<u>Soil/Groundwater</u>: The potential for release to soil and groundwater is low. The ground is covered both inside and outside Building 72 to prevent spills from entering the subsurface soil.

<u>Surface Water</u>: There is a low potential for release to surface water due to the release controls provided in the building.

<u>Air</u>: The potential for release to the air is low since all wastes are contained in sealed drums.

<u>Subsurface Gas</u>: The potential for generation of subsurface gas is low because infiltration of wastes into the soil is prevented by the concrete and asphalt pads at the unit.

21. HAZARDOUS WASTE STORAGE AREA

21.1. SITE HISTORY

21.1.1. Description of Hazardous Waste Storage Area

The hazardous waste storage area is an enclosed storage area located in Building 72 near the western edge of the Mound Plant (Figure 16.1). The building is enclosed on three sides with metal walls and is covered with a metal roof. The area is still in service. Stored drums of wastes are collected from several Mound Plant locations. Wastes stored in the hazardous waste storage area include combustible and flammable liquids and waste oils, solvent-containing wastes, ignitable wastes, plating wastes, photoprocessing wastes, polymeric wastes, and toxic wastes (Kearney 1988).

Drums are stored on a metal grate that covers the curbed, concrete floor. Drums are also stored outside on a curbed asphalt pad at the outdoor hazardous waste storage area and the empty drum storage area. The floor consists of three concrete bays which are curbed and sloped to contain potential spills of hazardous waste to the building. Drums rest on metal grates supported by each bay's concrete curbing. There is no evidence that the drums in this area have leaked.

21.1.2. Potential Hazardous Waste Storage Area Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the hazardous waste storage area.

21.2. FIELD INVESTIGATION

The RFA recommended no further action other than continuing compliance with RCRA regulations, and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

- How long has this building been in operat. & existed.

dh

31. Unit Information:

A. Unit Name: Radioactive Mixed Waste Consolidation Areas

Period of Operation: Unknown

Waste Type: Radioactive mixed wastes, primarily in the form of scintillation vials, organic solvents, heavy metals, corrosivity.

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: These units are accumulation areas for radioactive mixed wastes. Wastes are consolidated in 55-gallon drums in "operating areas" until transferred to Building 23 for storage (Ref. 55, Fig. V.4).

Additional Information Needed:

1. Wastes analyses
2. Numbers of units and locations
3. Dates of operation
4. Release controls
5. Dimensions
6. Regulatory status
7. Location of leak
8. Extent of remedial activities
9. Waste quantities

Unit No.:	CS-9
Unit Name:	Radioactive/Mixed Waste Storage Area
Unit Description:	The Radioactive/Mixed Waste Storage Area is an indoor unit used primarily for temporary staging of packaged radioactive waste from waste consolidation areas prior to offsite shipment. This unit is also RCRA-regulated and is used for storage of radioactive mixed waste, including scintillation vials - types 1, 2, 3 and acid and base wastes. Table 1, Attachment 4 (Ref. 66, Table C-9) describes EPA waste codes and radioisotopes contained in the wastes. This unit consists of a 30 by 40 foot storage area for holding 55-gallon drums of mixed waste. The entire building is a 30 by 117 foot one-story structure constructed of concrete block walls. An automatic sprinkler system is installed in the interior of the building. A six foot deep, 36-inch diameter concrete pipe comprises a manually controlled collection sump. Two loading docks on the front side of the building are used for transferring wastes for offsite shipment (Ref. 84). Approximately 85 gallons of scintillation vial waste (and associated packaging materials) are generated annually (Ref. 66, p. 4-7). During the VSI, the room contained approximately 100 drums stacked three-high.
Date of Start-up:	1979 (Ref. 84).
Date of Closure:	The unit is still in service.
Wastes Managed:	The storage area contains scintillation vials (radioactive contaminated solvent) and mixed radioactive corrosive wastes. A list of hazardous constituents in the wastes is included in Table 1, Attachment 4 (Ref. 66, Table C-9).
Release Controls:	The Radioactive/Mixed Waste Storage Area is an indoor unit which protects waste drums from exposure to sunlight and precipitation. The floor of the unit is concrete and sloped to the center of the room. A three foot diameter, six foot deep concrete sump provides containment for spills from this unit. It is not known whether the sump discharges collected wastewater to the Plant Drainage Ditch or to the WD Treatment System (SWMUs WD-1 through WD-2).

History of Releases: A DOE Environmental Survey Sampling and Analysis Plan (Ref. 73) documents a leak of a tar-like substance near the radioactive waste drums in the northeast corner of Building 23. The drums were stacked too close together for the inspection team to identify the source of the leak. It is unclear if hazardous substances or PCBs were contained in the leaked materials. There were no releases observed from this unit during the VSI.

Conclusions:

Soil/Groundwater: The potential for release to soil and groundwater is low. All wastes are stored indoors on a sloped concrete floor which confines wastes in the event of a release to a concrete sump.

Surface Water: There is a moderate potential for release to surface water from this unit since contents of the sump may be directed to the Plant Drainage Ditch. If the contents are discharged to the ditch they would pass through NPDES Outfall 002 without chemical treatment to the Great Miami River.

Air: The potential for release to the air is low since wastes are contained in sealed drums in the storage area.

Subsurface Gas: Since the wastes are stored indoors, in drums, and on a concrete floor, there is no potential for generation of subsurface gas.

22. RADIOACTIVE/MIXED WASTE STORAGE AREA

22.1. SITE HISTORY

22.1.1. Description of Radioactive/Mixed Waste Storage Area

The radioactive/mixed waste storage area is an indoor unit located at the south side of the WD Building (Figure 16.1). It is currently in service and is used primarily for temporary staging of packaged radioactive waste from waste consolidation areas prior to offsite shipment. This unit is also RCRA-regulated and is used for storage of radioactive mixed waste, including scintillation vials - types 1, 2, and 3, and acid and base wastes. Other wastes presently stored include PCBs, lead, uranium, thorium, mercury, ethylene glycol, oils, paint thinner, and mixed unknown chemicals.

This unit consists of a 30-ft by 40-ft storage area for holding 55-gallon drums of mixed waste. The entire building is a 30-ft by 117-ft, one-story structure constructed of concrete block walls. An automatic sprinkler system is installed in the interior of the building. A manually controlled collection sump comprises a 6-ft-deep, 36-inch-diameter concrete pipe. The sump is currently a closed-loop system. In the event of a spill, the material would be sampled and analyzed for potential contaminants. The spilled material could then be released to the storm sewer system if contaminants are below acceptable levels. Two loading docks on the front side of the building are used for transferring wastes for offsite shipment.

Would spills have been documented? could previous spills been released before closed loop system?

22.1.2. Potential Radioactive/Mixed Waste Storage Area Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the radioactive/mixed waste storage area.

A DOE Environmental Survey Sampling and Analysis Plan (DOE 1987) documents a leak of a tar-like substance near the radioactive waste drums in the northeast corner of Building 23. The source and composition of the leak were not identified. There were no releases observed from this unit during a visual site inspection (Kearney 1988).

22.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988). Because of the lack of observed releases and the presence of containment controls, no sampling is planned at the radioactive/mixed waste storage area during this limited field investigation.

Unit No.: CS-11

Unit Name: Drilling Mud Drum Storage Areas (3)

Unit Description: The Drilling Mud Drum Storage Areas are located near each of three groundwater monitoring wells in the southwest corner of northern property. These wells are just west of the Overflow Pond (SWMU SI-2) and Lined Landfill (SWMU F-1). There were approximately twelve 55-gallon drums filled with drilling muds at each of the storage areas. The drums were covered with sealed lids and stored on bare soil during the VSI. Following analysis, the muds will be disposed off-site (Ref. 84).

Date of Start-up: The drums have been stored in this area since the wells were drilled in the summer of 1987 (Ref. 84).

Date of Closure: The drums are still stored at this location. No additional drilling mud wastes generated at other facility locations are stored here.

Wastes Managed: The drums are filled with drilling muds containing barium. Barium is a drilling mud additive used in the construction of the monitoring wells. The concentration of barium is not known and the muds have not been analyzed for other hazardous constituents (Ref. 84).

Release Controls: The drums are located outdoors and rest on bare soil. The drums are closed with sealed lids. No secondary containment structures or other release controls were observed during the VSI.

History of Releases: There were no releases noted in the file information. The drums appeared to be in good condition and there were no releases observed during the VSI. Some of the drums were noted to be leaning on uneven ground.

Conclusions: Soil/Groundwater: There is a low to moderate potential for release to soil and groundwater. The drums appeared to be in good condition but the release potential is increased since they were placed outdoors on bare and uneven soil. Furthermore, there are no secondary containment structures to contain spilled or leaked material from the drums.

Surface Water:	The potential for releases to surface water is low to moderate since there are no secondary containment structures to prevent runoff of wastes in the event of a drum leak.
Air:	The potential for release to the air is low. All drums are sealed shut and contain non-volatile drilling muds.
Subsurface Gas:	There is a low potential for generation of subsurface gas due to the non-volatile nature of the drilling mud and because all drums are stored above-ground.

23. DOE SURVEY INACTIVE SITE FOUR

23.1. SITE HISTORY

23.1.1. Description of DOE Survey Inactive Site Four

Drilling mud drum storage areas were located near each of the three groundwater monitoring wells installed by the DOE environmental survey (MND01-151, -152, -153) in the southwest corner of the northern plant property (Figure 16.1). There are approximately twelve 55-gallon drums filled with drilling mud and cuttings at each area. The drums are covered with sealed lids and stored on bare soil. Following analysis, the contents will be disposed of offsite.

23.1.2. Potential DOE Survey Inactive Site Four Contaminants

Disposal of the drum contents will be completed pending results of analyses performed as part of the DOE environmental survey. There is no evidence to suggest that the cuttings are contaminated. Drill cuttings from boreholes adjacent to these have been sampled and analyzed as part of the ER Program Area B and Main Hill Seeps, Stage 2, remedial investigation, and were not found to contain elevated levels of hazardous constituents.

23.2. FIELD INVESTIGATION

The drums were sampled during the DOE environmental survey (DOE 1987), and results of sample analyses are pending. The drums contents will be appropriately disposed of following receipt of lab analyses. Therefore, no sampling of the drilling mud drum storage area is planned during this limited field investigation.

Unit No.:	CS-12
Unit Name:	Building 27 Solvent Storage Area
Unit Description:	The Building 27 Solvent Storage Area is located outdoors on the south side of Building 27 near the Building 27 Sump (SWMU SU-3). It consists of three or four 55-gallon drums on a concrete pad. The drums receive wastewater generated in Building 27 formerly discharged into the sump and to the Building 27 Leach Pit (SWMU SI-5). Drummed wastewater is transported from this unit once a week to the Hazardous Waste Storage Area (SWMU CS-7) (Ref. 84).
Date of Start-up:	The drum storage area was put into service in 1985 when the Building 27 Sump was taken out of service (Ref. 84).
Date of Closure:	The unit is still in operation.
Wastes Managed:	The wastewater stored in the drums contains acetone, ethanol and explosive constituents (Ref. 84). An analysis of the wastewater was not available.
Release Controls:	The drums are close-topped and placed on a concrete pad. The area is uncovered and has no secondary containment controls. No other release controls were observed during the VSI.
History of Releases:	No releases were noted in the file information. The drums appeared to be in good condition and no releases were observed during the VSI.
Conclusions:	Soil/Groundwater: There is a low to moderate potential for release to soil and groundwater. The drums appeared to be in good condition and were located over a concrete pad but the area has no secondary containment structure to confine spills to the pad.
	Surface Water: There is a moderate potential for release to surface water since the unit is located

within 50 feet of the Plant Drainage Ditch. There are no secondary containment structures to confine spills to the concrete pad and a large release from the drums would probably discharge into the ditch.

Air: The potential for air releases is low since all drums are closed-topped.

Subsurface Gas: The potential for generation of subsurface gas is low. All wastewater is contained in drums stored above-ground on a concrete pad.

24. BUILDING 27 SOLVENT STORAGE AREA

24.1. SITE HISTORY

24.1.1. Description of Building 27 Solvent Storage Area

-how long has this been in operation?

The Building 27 solvent storage area is currently in service and is located outdoors on the south side of Building 27 (Figure 16.1). It consists of three or four 55-gallon covered drums on a concrete pad. The drums receive Building 27-generated wastewater that was formerly discharged into a sump or leach pit. The wastewater in the drums contains acetone, ethanol, and explosive constituents. Drummed wastewater is transported from this unit to the hazardous waste storage area once a week. The drums appear to be in good condition and no evidence of releases was observed during a visual site inspection (Kearney 1988).

24.1.2. Potential Building 27 Solvent Storage Area Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the Building 27 solvent storage area.

24.2. FIELD INVESTIGATION

The RFA recommended no further action other than considering secondary containment (Kearney 1988). No potential environmental contaminants have been identified, and no additional sampling is required for scoping.

Unit No.:	CS-15
Unit Name:	Building B Temporary Drum Storage Area
Unit Description:	The Building B Temporary Drum Storage Area is an outdoor unit located adjacent to the Building B Solvent Storage Shed (SWMU CS-5). The area is approximately 15 feet on a side and contains approximately 26, fifty-five gallon drums. The drums are temporarily stored in this area while the Solvent Storage Shed is undergoing reconstruction. Solvent drums from the Building E are also stored in this unit while the Building E Solvent Storage Shed (SWMU CS-2) is reconstructed (Ref. 84).
Date of Start-up:	1988.
Date of Closure:	The unit will be in service only while the Building B and Building E Solvent Storage Sheds are under construction. Completion of construction will be completed later in the year.
Wastes Managed:	The unit is used to store waste solvents, waste oil, and trash from Buildings E and B (Ref. 84).
Release Controls:	The unit is underlain with a concrete pad. All drums in the area were closed-topped. No other release controls were observed during the VSI.
History of Releases:	No releases were noted in the file information or observed during the VSI.

Conclusions:

<u>Soil/Groundwater</u>: There is a low potential for release to soil and groundwater since all wastes are contained in closed drums over a concrete pad. A moderate potential for release to soil exists if a drum spill occurred since there is no secondary containment provided at the unit.

<u>Surface Water</u>: The potential for release to surface water is also low since full containment of the

wastes is provided by the drums. The potential for release is moderate if a drum spill occurred since there is no secondary containment provided at the unit.

Air: Since the wastes are confined to closed drums, there is no potential for air releases.

Subsurface Gas: There is no potential for generation of subsurface gas from this above-ground drum storage area.

25. BUILDING B TEMPORARY DRUM STORAGE AREA

25.1. SITE HISTORY

25.1.1. Description of Building B Temporary Drum Storage Area

The Building B temporary drum storage area is an outdoor unit located adjacent to the Building B solvent storage shed (Figure 16.1). The area is approximately 15 ft on a side and contains approximately twenty-six 55-gallon drums (Kearney 1988). The drums are temporarily stored in this area while the solvent storage shed undergoes reconstruction. Solvent drums from Building E are also being stored in this area while the Building E solvent storage shed undergoes reconstruction. The area is underlain by a concrete pad. All drums in the area are close-topped.

The drums stored in this unit contain a variety of waste solvents, waste oil, and trash from Buildings E and B. No releases have been documented.

25.1.2. Potential Building B Temporary Drum Storage Area Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the Building B temporary drum storage area.

25.2. FIELD INVESTIGATION

The RFA recommended no further action beyond considering secondary containment (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

16. Unit Information:

A. Unit Name: Test Firing Tanks
   Period of Operation: Unknown
   Waste Type: Solid and gaseous explosive residuals, carbon dioxide, water and nitrogen oxides (Ref. 23, p. 3-16)
   Hazardous Constituents: Nitrogen oxides (Ref. 23, p. 3-16)
   Regulatory Status: Unknown

B. Unit Description: Test Firing Tanks are used to determine the performance of explosives and explosive devices. The tanks are constructed of steel with a sealable door, instrumentation ports, and an exhaust opening with baffles and filters for release of gaseous explosion products. Particulate matter is retained in the tank. Testing firing operations released 0.45 kg of nitrogen oxides to the atmosphere in 1977 (Ref. 23, p. 3-16). Ref. 55 (Figure C.3) shows a Test Fire Area east of Overflow Pond (SWMU 15).

   Additional Information Needed:

   1. Regulatory status
   2. Period of operation
   3. Disposal of solid residuals
   4. Retention time of wastes
   5. Capacity/dimensions
   6. Hazardous constituents

Unit No.:	CS-17
Unit Name:	Test Firing Residual Storage Area
Unit Description:	The Test Firing Residual Storage Area is located inside Building 2 and used to store residuals generated during test firing of detonating devices. The waste is primarily aluminum residue stored in 30-gallon drums. The wastes were not viewed during the VSI since it is considered a classified material by DOE. Residue and undetonated wastes are treated at the Open Burn Area (SWMUs OB-1 through OB-8) (Ref. 84).
Date of Start-up:	1956 (Ref. 84).
Date of Closure:	The unit is still in service.
Wastes Managed:	The storage area is used to store unexploded detonation devices and explosion residuals generated during test firing. The waste is primarily aluminum residue.
Release Controls:	The wastes are contained in drums located indoors on a concrete floor. There is no contact of waste with sunlight or precipitation (Ref. 84).
History of Releases:	There were no releases noted in the file information. The area was not viewed during the VSI since the area was used by the Mound facility to manage classified materials.

Conclusions:	<u>Soil/Groundwater</u>:	There is no potential for release to soil and groundwater. Wastes are stored in drums and the unit is located indoors over a concrete pad.
	<u>Surface Water</u>:	There is no potential for release to surface water from this indoor unit.
	<u>Air</u>:	There is no potential for release to air due to the relatively non-volatile nature of the drummed wastes.

Subsurface Gas: There is no potential for generation of subsurface gas. Wastes are managed in drums, indoors, and above-ground on a concrete floor.

26. TEST FIRING RESIDUAL STORAGE AREA

26.1. SITE HISTORY

26.1.1. Description of Test Firing Residual Storage Area

The test firing residual storage area is located inside a classified area in Building 2 and is used to store residuals generated during test firing of detonating devices (Figure 16.1). The waste is primarily aluminum residue and explosive constituents stored in 30-gallon drums. The wastes are considered classified material by the DOE. The residue and undetonated wastes are treated at the open burn area.

The wastes are located indoors on a concrete floor. There is no contact of waste with sunlight or precipitation. There have been no documented or observed releases.

26.1.2. Potential Test Firing Residual Storage Area Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the test firing residual storage area.

26.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

50. Unit Information:

A. Unit Name: Strainer

Period of Operation: Unknown

Waste Type: Make-up solution from off-gas scrubber solution

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: This unit receives effluent from the Off-Gas Leaf Solution Filter (SWMU 49) in the Off-Gas Scrubber Solution Make-Up System (Ref. 66, p. 4-14). Figure 4-5a indicates that liquid from this unit (and a filter in parallel) is routed to the Deluge Tank (SWMU 43) or Venturi Scrubber (SWMU 44). No other information about this unit was available for review. This unit is inspected hourly when in use.

Additional Information Needed:

1. Design and construction
2. Regulatory status
3. Waste analysis
4. Dates of operation
5. Disposition of wastes

Unit No.:	AP-8
Unit Name:	Strainer
Unit Description:	The Strainer is another component of the Off-Gas Wastewater Treatment System located on the second floor of the WD Building Annex. It receives effluent from the Leaf Solution Filter (SWMU AP-7) and filters out iron chips prior to discharge to the Deluge Tank (SWMU AP-1) (Ref. 84). The iron chips have accumulated in the wastewater from the corrosion of the black iron pipes used in the treatment system. The Strainer is a fully enclosed, metal column, approximately five feet high and six inches in diameter (Ref. 84).
Date of Start-up:	1981.
Date of Closure:	The Strainer is still in service.
Wastes Managed:	The Strainer removes iron chips which accumulate in the wastewater from the pipes in the Glass Melter's Off-Gas Treatment System. An analysis of the wastewater or accumulated solids for hazardous constituents is not available; however, constituents known to be in the untreated emissions from the Glass Melter Furnace (SWMU IN-1) include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous constituents.
Release Controls:	The Strainer is a fully enclosed indoor unit. Filtered effluent from the Strainer is discharged to the Deluge Tank. In the event of a rupture in the unit, release liquid would be collected in the floor drains and discharged to the Alpha Wastewater Treatment System (SWMUs WD-1 and WD-2). The Off-Gas Treatment System including the Strainer is automatically shut down in the event of the flow rate or temperature exceeds operating specifications (Ref. 84).
History of Releases:	There were no releases noted in the file information or observed during the VSI. The containment integrity of the unit appeared to be adequate.
Conclusions:	<u>Soil/Groundwater</u>: There is no potential for release to soil or groundwater since the Strainer is

completely enclosed and located above-ground. The unit is an indoor unit underlain by a concrete floor slab which further eliminates the potential for releases to reach the soil at this location.

Surface Water:	There is no potential for release to surface water. The effluent is discharged to the Deluge Tank and any release due to a tank rupture would be collected in the floor drains and routed to the Alpha Wastewater Treatment System.
Air:	There are no releases to the air from this fully enclosed unit.
Subsurface Gas:	There is no potential for generation of subsurface gas from this fully enclosed, above-ground unit.

27. STRAINER

27.1. SITE HISTORY

27.1.1. Description of Strainer

The strainer is still in service and is a component of the off-gas wastewater treatment system located on the second floor of the WD Building annex (Figure 16.1). It receives effluent from the leaf solution filter and filters out iron chips prior to discharge to the deluge tank. The iron chips have accumulated in the wastewater from the corrosion of the black iron pipes used in the treatment system. The strainer is a fully enclosed metal column, approximately 5 ft high and 6 inches in diameter.

The strainer is a fully enclosed indoor unit. Filtered effluent from the strainer is discharged to the deluge tank. The system contains release controls that would discharge release liquid to the alpha wastewater treatment system. The off-gas treatment system, including the strainer, is automatically shut down in the event of the flow-rate or temperature exceeding the operational specifications. There have been no releases documented or observed.

27.1.2. Potential Strainer Contaminants

An analysis of the wastewater or accumulated solids for hazardous constituents is not available. However, constituents known to be in the untreated emissions from the glass melter furnace include metals, hydrochloric acid, polyaromatic hydrocarbons, and principal organic hazardous constituents.

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the strainer.

27.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

47. Unit Information:

A. Unit Name: Iodine Adsorption Bed (Absorbent Filter)
   Period of Operation: Unknown
   Waste Type: Gases from Off-Gas Cyclone Demister (SWMU 45)
   Hazardous Constituents: Unknown
   Regulatory Status: Unknown

B. Unit Description: This unit is part of the Off-Gas Scrubber System (Ref. 66, Figs. 4-4, 4-5). Filtered gases apparently are further treated by an Off-Gas nuclear grade high efficiency (HEPA) Filter (SWMU 48). This unit is inspected hourly when in use. No other information was available regarding this unit.

   Additional Information Needed:

   1. Dimensions and construction
   2. Waste analysis
   3. Dates of operation
   4. Regulatory status
   5. Disposition of spent filters
   6. Flow rates
   7. Monitoring results

Unit No.: AP-9

Unit Name: Iodine Absorption Filter

Unit Description: The Iodine Absorption Filter is a component of the Off-Gas Treatment System for the Glass Melter Furnace (SWMU IN-1) which has never been used. It is located in the WD Building Annex and was intended to treat gases discharged from the Cyclone Demister (SWMU AP-3). Gases from the Cyclone Demister bypass the Iodine Absorption Filter and enter further treatment to remove particulate matter at the HEPA Filter (SWMU AP-4).

Date of Start-up: The unit was never put into service.

Date of Closure: The unit is inactive and was never used.

Wastes Managed: The Iodine Absorption Filter was included in the Off-Gas Treatment System to be utilized for particulate removal. The unit was never used and gases from the Cyclone Demister are discharged to the HEPA Filter.

Release Controls: The Iodine Absorption Filter is an above-ground, fully enclosed, metal unit. The unit is inactive and has never been used.

History of Releases: There were no releases noted in the file information or observed during the VSI.

Conclusions: There is no potential for release to the soil, groundwater, surface water, air, or for generation of subsurface gas since the unit is inactive and has never been used.

28. IODINE ABSORPTION FILTER

28.1. SITE HISTORY

28.1.1. Description of Iodine Absorption Filter

The iodine absorption filter has never been used and is a component of the off-gas treatment system for the glass melter furnace. It is located in the WD Building annex and was intended to treat gases (particulate removal) discharged from the cyclone demister (section 46; Figure 16.1). Gases from the cyclone demister bypass the iodine absorption filter and enter further treatment to remove particulate matter at the HEPA filter. The unit is above-ground and is fully enclosed in metal.

28.1.2. Potential Iodine Absorption Filter Contaminants

Because the unit has never been used, there are no potential contaminants.

28.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

Unit No.:	AP-11
Unit Name:	Ventilation Hoods
Unit Description:	There are approximately 570 Ventilation Hoods at various indoor locations at the facility (Ref. 81, p. 3-11). Seven hoods were observed during the VSI in Building E, Room 143. The Ventilation Hoods' function in this area is to remove potentially contaminated indoor air from laboratory work spaces. The Ventilation Hoods are located over other laboratory and process areas at the facility and are equipped with fans to accelerate discharge. Metal ducts convey the exhaust from the hoods to the roof of the building (Ref. 84).
Date of Start-up:	Unknown.
Date of Closure:	Ventilation Hoods are still in service.
Wastes Managed:	The Ventilation Hoods are designed to collect and vent gases, fumes and other particulate matter to the atmosphere. Ventilated wastes include explosive gases, paint fumes, dust, acid gases, asbestos, and other chemicals. Hazardous constituents of these waste streams include acetone, trichloroethylene, benzene, chloroform, toluene, methylene chloride hydrofluoric acid, hydrochloric acid, sulfuric acid, nitric acid, methylethyl ketone (Ref. 81, p. D-1). The concentration or volumes of each constituent releases was not provided.
Release Controls:	The Ventilation Hoods direct gas and particulate emissions directly or via air pollution control equipment to the atmosphere (Ref. 81, pp. 3-1, 12, 13). The Ventilation Hoods in Building E direct emissions to the atmosphere via a single roof vent without treatment by air pollution control equipment (Ref. 84). Air releases are regulated by the Regional Air Pollution Control Authority (Ref. 55).
History of Releases:	Hazardous constituents are released directly to the atmosphere without treatment in some areas of the facility.
Conclusions:	<u>Soil/Groundwater</u>: There is a moderate potential for release of particulate matter from the Ventilation

	Hoods to uncovered soil, especially in areas where dust is discharged to the air without prior treatment.
Surface Water:	There is a moderate potential for release to surface water. Particulate matter discharged to the air without prior treatment may fall out onto nearby surface water bodies.
Air:	Releases from the Ventilation Hoods to the atmosphere occur from some areas of the facility without treatment.
Subsurface Gas:	There is no potential for generation of subsurface gas since the units are aboveground and located indoors.

29. VENTILATION HOODS

29.1. SITE HISTORY

29.1.1. Description of Ventilation Hoods

There are approximately 570 ventilation hoods in 34 buildings still in service at the facility. Ventilation hoods are located over laboratory and process areas at the facility and are equipped with fans to accelerate discharge. Metal ducts convey the exhaust from the hoods to the roofs of the buildings.

The hoods are designed to collect and vent gases, fumes, and other particulate matter to the atmosphere. Ventilated wastes include explosive gases, paint fumes, dust, acid gases, asbestos, and other chemicals. The ventilation hoods direct gas and particulate emissions directly, or by way of air pollution control equipment, to the atmosphere.

29.1.2. Potential Ventilation Hoods Contaminants

Hazardous constituents of these waste streams include acetone, trichloroethene, benzene, chloroform, toluene, methylene chloride, hydrofluoric acid, hydrochloric acid, sulfuric acid, nitric acid, and 2-butanone (Kearney 1988).

29.2. FIELD INVESTIGATION

Although hazardous constituents may be released directly to the atmosphere without treatment in some areas of the facility, air releases are regulated by the Regional Air Pollution Control Authority (Kearney 1988). Therefore, no sampling of the ventilation hoods is planned during this limited field investigation.

Do these ventilation hoods have an air permit.

52. Unit Information:

A. Unit Name: Retort (Rotary kiln)

Period of Operation: Unit installed in 1983

Waste Type: D003 explosive wastes (primarily detonators and pellets), mild detonating cord (MDC) and mild detonating fuse (MDF).

Hazardous Constituents: Unknown

Regulatory Status: RCRA permit sought

B. Unit Description: This unit is a propane-fired rotary kiln used to destroy explosive wastes. The unit is three feet in diameter, has a 10-foot long kiln, and a vent stack (Ref. 66, p. 4-64). It is located in a four-inch thick concrete foundation and within a one-foot thick concrete enclosure. The kiln is heated to 800°F. The process is monitored every few minutes during operation. The temperature is controlled automatically.

Additional Information Needed:

1. Date of closure APCD?
2. Waste analysis
3. Air monitoring analytes and results
4. Frequency of inspections
5. Disposition of waste residue

Unit No.:	OB-3
Unit Name:	Retort (Rotary Kiln)
Unit Description:	The Retort, located in the Open Burn Area, is a propane-fired rotary kiln used to destroy explosive wastes. The unit is three feet in diameter, 10 feet long, and has a vent stack (Ref. 66, p. 4-64). The walls of the unit are four inches thick. It is fully enclosed and located on a four-inch thick concrete floor slab within a one-foot thick concrete enclosure. The enclosure is approximately 30 feet by 15 feet and is covered with a metal screen. During operation, the Retort is heated to 800 degrees Fahrenheit. The process is monitored every few minutes during operation. The temperature is controlled automatically (Ref. 66). Wastes are loaded into the Retort on a conveyor from the Building 90 Blockhouse (SWMU OB-4). Residence time of the wastes in the unit is approximately five minutes. Ash and residue is visually inspected and disposed off-site (Ref. 84). The unit was not operating during the VSI.
Date of Start-up:	1984.
Date of Closure:	The unit is still in operation.
Wastes Managed:	The Retort is used to destroy explosive wastes (primarily detonators and pellets), mild detonating cord (MDC) and mild detonating fuse (MDF). All explosives destroyed in this unit are encased finger-sized components that cannot be disposed by other means (Ref. 84). The wastes are DOE classified materials and could not be inspected during the VSI.
Release Controls:	The Retort is a fully enclosed unit which discharges combustion emissions to the atmosphere. All other products of incomplete combustion are retained in the unit.
History of Releases:	There were no releases from this unit noted in the file materials. During the VSI, the Retort was not in operation. The concrete floor of the enclosure was clean and free of cracks. No releases were

observed. Facility representatives indicated that heat has been the only observed emission from the unit.

Conclusions:	Soil/Groundwater:	There is no potential for release to soil and groundwater because the Retort is enclosed and underlain by a concrete floor. All ash and uncombusted materials are retained within the Retort.
	Surface Water:	There is no potential for release to surface water. The unit is fully enclosed and surrounded by concrete walls. There is no contact of the wastes with falling precipitation or runoff.
	Air:	The combustion emissions from the Retort are discharged to the atmosphere without treatment or monitoring.
	Subsurface Gas:	There is no potential for release to soil and groundwater because the Retort is enclosed and underlain by concrete. All ash and uncombusted materials are retained within the Retort.

30. RETORT

30.1. SITE HISTORY

30.1.1. Description of Retort

The retort, located adjacent to the Building 90 blockhouse, is a propane-fired rotary kiln used to destroy explosive wastes (Figure 16.1). The unit is 3 ft in diameter, 10 ft long, and has a vent stack. The walls of the unit are 4 inches thick. It is fully enclosed and located on a 4-inch-thick concrete slab floor within a 1-ft-thick concrete enclosure. The enclosure is approximately 30 ft by 15 ft and is covered with a metal screen. During operation, the retort is heated to 800 degrees Fahrenheit. The process is monitored every few minutes during operation. The temperature is controlled automatically. Wastes are loaded into the retort on a conveyor from the Building 90 blockhouse. Residence time of the wastes in the unit is approximately 5 minutes. Ash and residue are visually inspected and disposed of off the site.

The retort is used to destroy explosive wastes (primarily detonators and pellets), mild detonating cord, and mild detonating fuses. All explosives destroyed in this unit are encased finger-sized components that cannot be disposed of by other means. The wastes are DOE-classified materials. The unit is fully enclosed and no releases from the unit have been documented.

30.1.2. Potential Retort Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the retort.

30.2. FIELD INVESTIGATION

The RFA recommended no further action beyond air monitoring (Kearney 1988). Potential air releases are already addressed in a Regional Air Pollution Control Authority (RAPCA)-required monitoring, therefore, no additional sampling is required for scoping.

53. Unit Information:

A. Unit Name: Building 90 Blockhouse
Period of Operation: Unknown
Waste Type: D003 explosive wastes
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: This is an ancillary waste storage unit associated with the Retort (SWMU 52). Small-quantity wastes are placed on a feed conveyor accessible through a port in the Blockhouse which is adjacent to the Retort. A screw feeder transfers the waste from the conveyor to the inside of the Retort (Ref. 66, p. 4-64).

Additional Information Needed:

1. Dates of operation
2. Dimensions and construction
3. Release controls
4. Waste quantities
5. Waste analysis

Unit No.: OB-4

Unit Name: Building 90 Blockhouse

Unit Description: The Building 90 Blockhouse is a fully enclosed ancillary waste storage unit associated with the Retort (SWMU OB-3). The Blockhouse is located just east of the Retort and is used to house the Retort's waste feed equipment. Small detonation devices are placed manually onto a conveyor accessible through a port in the Blockhouse. A screw-feeder transfers the wastes from the conveyor into the Retort (Ref. 66, p. 4-64). The dimensions of the Building 90 Blockhouse are approximately 10 feet by 10 feet with concrete walls and floor (Ref. 84). The conveyor was not in operation during the VSI.

Date of Start-up: 1984.

Date of Closure: The unit is still in service.

Wastes Managed: The Building 90 Blockhouse is used to convey encased explosive wastes (primarily detonators and pellets), mild detonating cord and mild detonating fuse (Ref. 66).

Release Controls: The unit is fully enclosed and underlain by concrete. Wastes are encased in the detonating devices as they are placed on the conveyor. There is no waste residue produced in the building (Ref. 84).

History of Releases: There were no releases noted in the file information. The floor of the building appeared clean and no releases were observed during the VSI.

Conclusions: Soil/Groundwater: There is no potential for release to soil and groundwater. The unit is underlain by a concrete floor slab and the explosive wastes are encased in the detonation device.

Surface Water: There is no potential for release to surface water. The wastes are fully enclosed in the building where there is no contact with precipitation or surface runoff.

<u>Air</u>:	There is no potential for air releases from this unit. Wastes are encased in the detonation devices and housed in the building. Waste explosive materials are not exposed to the air in this unit.
<u>Subsurface Gas</u>:	There is no potential for generation of subsurface gas. The unit is located above-ground on a concrete floor slab.

31. BUILDING 90 BLOCKHOUSE

31.1. SITE HISTORY

31.1.1. Description of Building 90 Blockhouse

The Building 90 blockhouse is a fully enclosed ancillary waste storage unit associated with the retort. The blockhouse is located just east of the retort and is used to house the retort's waste feed equipment (Figure 16.1). The unit is still in service. Explosive wastes are placed manually onto a conveyor accessible through a port in the blockhouse. The wastes include encased explosive wastes, mild detonating cord, and mild detonating fuses. The wastes are then transferred by way of a screw-feeder from the conveyor into the retort. The blockhouse is approximately 10 ft by 10 ft with concrete walls and floor. No waste residue is produced in the building.

31.1.2. Potential Building 90 Blockhouse Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the Building 90 blockhouse.

31.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

42. Unit Information:

A. Unit Name: Pyrotechnic Waste Shed

Period of Operation: Unknown

Waste Type: Pyrotechnic powders and pyrotechnic-contaminated wastes (D003).

Hazardous Constituents: Unknown

Regulatory Status: Unknown

B. Unit Description: The Pyrotechnic Waste Shed temporarily stores pyrotechnic waste prior to thermal destruction. The shed is located inside the fenced Drum Area. The unit is constructed on a concrete pad - 9 by 15 feet in area and 7 feet high with chain-link fence side walls. The roof is constructed of 18-gauge galvanized corrugated steel (Ref. 66). Contaminated trash and pyrotechnic "providers" are saturated with mineral oil, contained within two conductive bags, and further sealed within a metal can. The facility indicates that "pyrotechnical components are stored in non-propagating trays inside of a metal suitcase" (Ref. 66, p. 10-6).

Additional Information Needed:

1. Regulatory status
2. Dates of operation
3. Waste analysis
4. Waste management description
5. Definition of "provider" and "non-propagating tray"

Unit No.: OB-5

Unit Name: Pyrotechnic Waste Shed

Unit Description: The Pyrotechnic Waste Shed is a temporary storage area for pyrotechnic waste prior to thermal destruction. The shed is located in the Open Burn Area and is constructed on a concrete pad. The dimensions of the shed are 15 feet by 9 feet with a 7-foot high chain-link fence side walls. The roof is constructed of 18-gauge galvanized corrugated steel (Ref. 66). Contaminated trash and pyrotechnic wastes are saturated with mineral oil, double-bagged, and sealed in a metal can. The facility indicates that "pyrotechnical components are stored in non-propagating trays inside of a metal suitcase" (Ref. 66, p. 10-6). The Biodegradation Unit is also located in the Pyrotechnic Waste Shed (Ref. 84).

Date of Start-up: Facility representatives indicated the start-up date was approximately 1975 (Ref. 84).

Date of Closure: The unit is still in service.

Wastes Managed: The shed is a temporary storage area for pyrotechnic powders and pyrotechnic-contaminated wastes (D003) (Ref. 66).

Release Controls: The unit has a concrete floor but no curbing to provide secondary containment for spills on the floor. All wastes are enclosed in drums in the shed. The drums are protected from precipitation by the corrugated steel roof (Ref. 84).

History of Releases: No releases were noted in the file information. During the VSI, the wastes were stored securely in drums. The floor of the shed was clean and free of wastes. No releases were observed.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is low to moderate. The floor of the shed is constructed of concrete but there are no secondary containment structures to prevent spilled wastes from entering adjacent soil.

Surface Water:	The potential for release to surface water is low since the unit is protected from falling precipitation. The potential is further minimized since the unit is more than 400 feet from the Plant Drainage Ditch.
Air:	The potential for release to the air is low since wastes are contained in drums inside the shed.
Subsurface Gas:	There is a low potential for generation of subsurface gas from this above-ground unit.

32. PYROTECHNIC WASTE SHED

32.1. SITE HISTORY

32.1.1. Description of Pyrotechnic Waste Shed

The pyrotechnic waste shed is a temporary storage area for pyrotechnic waste prior to thermal destruction. The shed is located in the open burn area and is constructed on a concrete pad (Figure 16.1). The unit is still in service. The dimensions of the shed are 15 ft by 9 ft, with 7-ft-high chain-link fence side walls. The roof is constructed of 18-gauge galvanized corrugated steel. Contaminated trash and pyrotechnic wastes are saturated with mineral oil, double-bagged, and sealed in a metal can. The facility indicates that "pyrotechnical components are stored in non-propagating trays inside of a metal suitcase" (Kearney 1988). The biodegradation unit (section 33) is also located inside the pyrotechnic waste shed.

32.1.2. Potential Pyrotechnic Waste Shed Contaminants

No releases are documented and no evidence of releases was observed during a visual site inspection. All wastes are packaged and enclosed in metal drums. Therefore, no sampling of the pyrotechnic waste shed is planned during this limited field investigation.

32.2. FIELD INVESTIGATION

The RFA recommended no further action other than considering secondary containment (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

55. Unit Information:

A. Unit Name: Biodegradation Unit

Period of Operation: Unknown

Waste Type: Soapy rinsate from decontamination of equipment used in pyrotechnic operations.

Hazardous Constituents: Unknown

Regulatory Status: RCRA permit sought

B. Unit Description: This unit consists of a portable steel cylinder (1 foot diameter, 2 feet high) mounted on legs and placed within a 30-inch by 30-inch by 6-inch high tray. Screens are placed at the top and bottom of the cylinder. A filter (through which the waste is poured) is placed on top of the upper screen. The waste apparently is treated by evaporation and biodegradation.

Additional Information Needed:

1. Waste analysis
2. Waste quantities
3. Dates of operation
4. Disposition of waste residues and filters
5. Location of unit
6. Release controls

Unit No.:	OB-6
Unit Name:	Biodegradation Unit
Unit Description:	The Biodegradation Unit is a portable steel cylinder (one foot diameter, two feet high) mounted on legs and placed within a 30-inch by 30-inch by 6-inch deep metal tray. Screens are placed at the top and bottom of the cylinder and pyrotechnic-contaminated liquids are poured through a filter placed on top of the upper screen. The waste is treated by evaporation and biodegradation. Pyrotechnic filters are then destroyed at the Thermal Treatment Unit (Ref. 66, p. 4-66). The Biodegradation Unit is located in the Pyrotechnic Storage Shed in the Burn Area. During the VSI, the metal tray was observed to contain a few inches of liquid (Ref. 84).
Date of Start-up:	1975.
Date of Closure:	The unit is still in operation.
Wastes Managed:	The unit is used to treat soapy rinsate from decontamination of equipment used in pyrotechnic operations (Ref. 66). An analysis of the water for hazardous constituents was not available.
Release Controls:	The Biodegradation Unit is located on the concrete floor inside the Pyrotechnic Waste Shed where the tray is protected from precipitation. No other release controls were observed during the VSI.
History of Releases:	There were no releases noted in the file information. The pyrotechnic wastewater was contained in the tray and the floor of the shed was clean and dry during the VSI.

Conclusions:	Soil/Groundwater:	The potential for release to soil and groundwater is low since the liquid from the unit is contained in the metal tray. The tray is also underlain by a concrete pad.
	Surface Water:	The potential for release to surface water is low. This is because of the relatively

small volume of waste handled at one time and because the unit is more than 400 feet from the Plant Drainage Ditch.

Air: The potential for release to air is low to moderate since the liquid in the tray is allowed to evaporate. The potential for release is minimized due to the relatively inert nature of the liquid and small surface area of the tray.

Subsurface Gas: There is no potential for generation of subsurface gas. The unit is operated above-ground on a concrete pad.

33. BIODEGRADATION UNIT

33.1. SITE HISTORY

33.1.1. Description of Biodegradation Unit

The biodegradation unit is a portable steel cylinder (1 ft in diameter and 2 ft high) mounted on legs and placed within a 30-inch by 30-inch by 6-inch-deep metal tray. The unit is located inside the pyrotechnic waste shed (section 32) in the open burn area and is still in service (Figure 16.1). Screens are placed at the top and bottom of the cylinder and pyrotechnic-contaminated liquids are poured through a filter placed on top of the upper screen. The unit is used to treat the soapy rinsate from the decontamination of equipment used in pyrotechnic operations. Analysis of the water for hazardous constituents is not currently available. The water is treated by evaporation and biodegradation. Pyrotechnic filters are then destroyed in the thermal treatment unit.

33.1.2. Potential Biodegradation Unit Contaminants

No releases have been documented and no evidence of releases was observed during a visual site inspection (Kearney 1988).

33.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

20. Unit Information:

A. Unit Name: Explosive Storage Area

Period of Operation: Unknown

Waste Type: Detonators, high explosive powder, detonating cord, pyrotechnic powders, hexanitrostilbene and primary explosives (Ref. 66, App. C, Table C-8) and EPA-listed waste 0003

Hazardous Constituents: Unknown

Regulatory Status: RCRA Regulated

B. Unit Description: The Explosive Waste Storage Area, also known as Magazine 53, is located inside the fenced Open Burning Area (SWMU 1) (Ref. 66) on the south end of the facility (Ref. 37). It is used for temporary storage of containerized explosive waste prior to on-site thermal destruction. The bunker measures approximately 15.5 feet by 10 feet and is approximately 10 feet high. The walls and ceiling of the bunker are constructed of corrugated 10 gauge Armco multiplate. The end-walls are made of reinforced concrete approximately 12 inches thick. Compacted earth fill surrounds the walls with only the front wall uncovered for access. The fill provides more than two feet of cover on the top of the bunker (Ref. 66, p. 4-8).

Additional Information Needed:

1. Period of operation
2. Hazardous constituents

Unit No.: OB-7

Unit Name: Explosive Waste Storage Bunker (Magazine 53)

Unit Description: The Explosive Waste Storage Bunker, also known as Magazine 53, is located inside the fenced Open Burning Area. It is used for temporary storage of containerized explosive waste prior to on-site thermal destruction. The bunker measures approximately 15.5 feet by 10 feet and is approximately 10 feet high. The walls and ceiling of the bunker are constructed of corrugated 10 gauge Armco multiplate. The end-walls are made of reinforced concrete approximately 12 inches thick. Compacted earth fill surrounds the walls with only the front wall uncovered for access. The fill provides more than two feet of cover on the top of the bunker (Ref. 66, p. 4-8).

During the VSI, the Storage Bunker contained classified, non-explosive waste to be disposed off-site. No explosive wastes were present in the unit. The floor of the bunker is constructed of concrete covered with linoleum tile. Photographs mounted on the metal door located on the bunker's north end showed the bunker when it was filled with classified explosive wastes. The fill material over the bunker was covered with vegetation (Ref. 84).

Date of Start-up: The exact date of start-up is not known but facility representatives indicated it probably was put into service around 1970 (Ref. 84).

Date of Closure: The unit is still in service.

Wastes Managed: The Explosive Waste Storage Bunker is used to store detonators, high explosive powder, detonating cord, pyrotechnic powders, hexanitrostilbene and primary explosives (EPA listed wastes D003) (Ref. 66, App. C, Table C-8). There were no explosive wastes stored in the unit during the VSI.

Release Controls: All wastes stored in the bunker are contained in drums. The bunker provides an enclosed shelter for the wastes and protects them from sunlight and precipitation. The metal door is kept closed and locked when the bunker is not occupied. No secondary containment structures on the floor of the unit were observed during the VSI (Ref. 84).

History of Releases:	There were no releases noted in the file information. The inner walls of the bunker appeared to be in solid and in good condition during the VSI. No wastes were noted anywhere in the unit. The walls, floor, and shelves were observed to be clean and dry.

Conclusions:	Soil/Groundwater:	The potential for release to soil and groundwater is low. There are no liquid wastes stored in the bunker that, if released, could seep into subsurface soil. All wastes are solid and contained in drums in the bunker. The potential for release is further minimized since the bunker is underlain by a concrete floor slab which is in good condition.
	Surface Water:	There is no potential for surface water releases since wastes are fully contained in drums inside the enclosed bunker. There is no contact of wastes with precipitation.
	Air:	The potential for release to the air is low. There are no volatile wastes stored in the bunker. Combustion emissions would be released in the event that an explosion occurred in the bunker. Releases in this case would be localized since the bunker is completely enclosed and covered with soil.
	Subsurface Gas:	There is no potential for generation of subsurface gas since volatile wastes are not stored in this unit.

34. EXPLOSIVE WASTE STORAGE BUNKER

34.1. SITE HISTORY

34.1.1. Description of Explosive Waste Storage Bunker

The explosive waste storage bunker, also known as Magazine 53, is located inside the fenced open burn area and is still in service (Figure 16.1). It is used for temporary storage of containerized explosive waste prior to onsite thermal destruction. The waste consists of detonators, high-explosive powder, detonating cord, pyrotechnic powders, hexanitrostilbene, and primary explosives. The bunker measures approximately 15.5 ft by 10 ft and is approximately 10 feet high. The walls and ceiling of the bunker are constructed of corrugated 10-gauge steel multiplate. The end walls are made of reinforced concrete approximately 12 inches thick. Compacted earth fill surrounds the walls with only the front wall uncovered for access. The fill provides more than 2 ft of cover on the top of the bunker. The floor of the bunker is constructed of concrete covered with linoleum tile.

All wastes stored in the bunker are contained in drums. The bunker provides an enclosed shelter for the wastes and protects them from sunlight and precipitation. The metal door is kept closed and locked when the bunker is not occupied. There is no evidence of releases (Kearney 1988).

34.1.2. Potential Explosive Waste Storage Bunker Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the explosive waste storage bunker.

34.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

58. Unit Information:

A. Unit Name: Building 1 Leach Pit

Period of Operation: Late 1960s-1985 (Ref. 73, p. 3-45)

Waste Type: Water, ethanol, acetone, and trace amounts of high explosives (Ref. 73).

Hazardous Constituents: Ethanol, acetone (Ref. 73)

Regulatory Status: Unknown

B. Unit Description: The Leach Pit was operated near Building 1. Its dimensions were similar to SWMU 57, the Solvent Leach Bed (25 feet square and 5 feet deep)(Ref. 73, p. 3-45).

Additional Information Needed:

1. Materials of construction
2. Source of wastewater
3. Volume of wastewater disposed
4. Status of closure
5. Release controls

Unit No.:	SU-2
Unit Name:	Building 1 Sump
Unit Description:	The Building 1 Sump is a partially covered, inactive pit located on the west side of Building 1. Its dimensions are approximately four feet by four feet and three feet deep. It is concrete-lined and covered with a metal lid. The sump's function was to collect wastewater from Building 1, filter it to remove contaminants, and discharge the effluent to the Building 1 Leach Pit (SWMU SI-4) (Ref. 84). The sump was dredged every three or four years. The sludge and filters were destroyed on-site by thermal treatment (Ref. 55).
Date of Start-up:	Early 1960s (Ref. 81).
Date of Closure:	The sump's influent and effluent lines were blocked in 1985 (Ref. 84).
Wastes Managed:	The wastewater discharged into the sump contained small amounts of dissolved explosives (ppm range, grams per year) and acetone (4 m^3/year) (Ref. 55).
Release Controls:	The sump was closed-topped and discharged filtered wastewater by gravity to the Leach Pit. The liner also prevents infiltration of hazardous constituents into the subsurface soil.
History of Releases:	There were no releases, other than those to the Leach Pit, noted in the file information. The sump was observed to contain only rainwater during the VSI. The concrete liner appeared to be in good condition.

Conclusions:	<u>Soil/Groundwater</u>:	The potential for past releases to soil and groundwater from the sump is low. The sump's concrete liner appeared to be in good condition. There is no ongoing potential for release since the unit is no longer used to contain process wastewater.
	<u>Surface Water</u>:	There is no potential for release to surface

water since the unit is inactive and waste sludge has been removed from the sump.

Air: There is no potential for release to the air since the unit is inactive and no wastes remain in the sump.

Subsurface Gas: Since the unit is concrete-lined, the potential for generation of subsurface gas from volatile constituents in the wastewater is low.

35. BUILDING 1 SUMP

35.1. SITE HISTORY

35.1.1. Description of Building 1 Sump

The Building 1 sump is a partially covered, inactive pit located on the west side of Building 1 (Figure 16.1). It is approximately 4 ft by 4 ft by 3 ft deep, concrete-lined, and covered with a metal lid. The function of the sump was to collect wastewater from Building 1, filter it to remove contaminants, and discharge (by gravity) the effluent to the Building 1 leach pit. The wastewater discharged into the sump contained small amounts of dissolved explosives (ppm range, grams per year) in a liquid composed primarily of acetone. Up to 4 m^3/yr of this liquid was discharged through the Building 1 sump (Kearney 1988). The sump was dredged every 3 to 4 years. The sludge and filters were destroyed onsite by thermal treatment.

No releases have been documented and no evidence of releases was observed during a visual site inspection (Kearney 1988). The concrete liner was observed to be in good condition. The sump was dredged at the time of deactivation.

35.1.2. Potential Building 1 Sump Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the Building 1 sump.

35.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

59. Unit Information:

A. Unit Name: Building 27 Leach Pit
Period of Operation: Unknown
Waste Type: Unknown
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: A description of this unit was not provided in the information available for this report. Reference 73 provided only the name of the unit and implied that it was used for disposal of wastes similar to those in the Solvent Leach Bed (SWMU 57) and the Building 1 Leach pit (SWMU 58) (Ref. 73, p. 3-45).

Additional Information Needed:

1. Location
2. Dimensions
3. Materials of construction
4. Regulatory status
5. Period of operation
6. Waste type
7. Hazardous constituents

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8. Release controls

Unit No.: SU-3

Unit Name: Building 27 Sump

Unit Description: The Building 27 Sump is a partially covered, inactive pit located near the south side of Building 27. Its dimensions are approximately six feet by three feet and four feet deep. It is lined with concrete and covered with a metal lid. The sump was used to collect wastewater from Building 27, filter it to remove suspended contaminants, and discharge the effluent to the Building 27 wastewater through a covered concrete flume. Sump effluent was discharged by gravity to the Building 27 Leach Pit (SWMU SI-5) through an underground pipeline. The Leach Pit is located approximately 200 feet west of the sump. The sump was dredged every three or four years to remove accumulated sludge. This sludge and spent filters were destroyed on-site by thermal treatment (Ref. 84).

Wastewater generated at Building 27 is now discharged into the Concrete Flume (SWMU MI-14) where it accumulates without being discharged into the sump. The flume is approximately 20 feet long, 10 inches wide, and 12 inches deep. The wastewater is then pumped from the flume into 55-gallon drums at the adjacent Building 27 Solvent Storage Area (Ref. 84).

Date of Start-Up: The exact start-up date is unknown but was probably in the early 1960s (Ref. 84).

Date of Closure: The sump was taken out of service in 1985 (Ref. 84).

Wastes Managed: The wastewater discharged from Building 27 into the sump contained acetone, ethanol, and dissolved explosives (Ref. 84).

Release Controls: The sump was closed-topped and discharged by gravity to the Leach Pit to prevent overtopping. The sump was concrete-lined to prevent infiltration of hazardous constituents into the subsurface soil.

History of Releases: There were no releases other than those to the Leach Pit noted in the file information. The sump was observed to contain only rainwater during the VSI. The concrete liner appeared to be in good condition. A facility schematic of the storm sewers indicates the sump may have discharged wastewater at one time to the Plant Drainage Ditch (Ref. 96).

Conclusions:

Soil/Groundwater: The potential for past releases to soil and groundwater directly from the sump is low. The sump is concrete-lined and the liner appeared to be in good condition. There is no ongoing potential for direct releases to the soil since the unit is no longer used to contain process wastewater. There is a moderate potential for release to soil and groundwater since it appeared that wastewater currently contained in the Concrete Flume, could flow over the barrier into the sump. If enough wastewater accumulated in the sump it could drain into the Leach Pit where contaminants could enter the soil. There is no equipment to automatically divert wastewater from the flume to the drums.

Surface Water: There is no potential for release to surface water since the unit is inactive and waste sludge has been removed from the sump. Past releases to the Plant Drainage Ditch may have occurred via the suspected drain line from the sump.

Air: There is no potential for release to the air since the unit is inactive and no wastes remain in the sump.

Subsurface Gas: Since the unit is concrete-lined, the potential for generation of subsurface gas from volatile constituents in the wastewater is low.

36. BUILDING 27 SUMP

36.1. SITE HISTORY

36.1.1. Description of Building 27 Sump

The Building 27 sump is a partially covered, inactive pit located near the south side of Building 27 (Figure 16.1). It is approximately 6 ft by 3 ft by 4 ft deep, lined with concrete, and covered with a metal lid. The sump was used to collect wastewater from Building 27, filter it to remove suspended contaminants, and discharge the effluent to the Building 27 leach pit. The wastewater discharged from Building 27 into the sump contained acetone, ethanol, and dissolved explosives. Sump effluent was discharged by gravity through an underground pipeline. The leach pit is located approximately 200 ft west of the sump. The sump was dredged every three to four years to remove accumulated sludge. This sludge and spent filters were destroyed onsite by thermal treatment (Kearney 1988). Wastewater currently generated at Building 27 now bypasses the sump.

The sump has been out of service since 1985. No releases have been documented other than discharge to the leach pits and no evidence of releases was observed during a visual site inspection (Kearney 1988). The sump was observed to only contain rainwater, and the concrete liner appeared to be in good condition. The Building 27 leach pit will be sampled as part of limited field sampling of Miscellaneous Sites, Operable Unit 7.

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36.1.2. Potential Building 27 Sump Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the Building 27 sump.

36.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

56. Unit Information:

A. Unit Type: Drum Carts/Collection Vehicles
Period of Operation: Unknown
Waste Type: Containerized hazardous wastes and radioactive mixed wastes.
Hazardous Constituents: Unknown
Regulatory Status: Unknown

B. Unit Description: Drum carts are used to manually transfer containerized wastes to collection vehicles at generating points throughout the facility (Ref. 66, p. 5-10). The collection vehicles are small trucks with hydraulically activated tailgates.

Additional Information Needed:

1. Number of units
2. Decontamination procedures
3. Dates of operation

Unit No.: MI-4

Unit Name: Waste Transport Vehicles

Unit Description: The Waste Transport Vehicles used at the site include hand carts, fork lifts, a modified step van, box truck, cargo bed truck, stake bed truck and a tank truck. The hand carts are used indoors to transport drummed wastes. The step van and box van transport explosive wastes in containers from various on-site locations to the Open Burn Area. Drummed hazardous wastes are transported by a stake bed truck and a cargo bed truck to the Hazardous Waste Storage Area (SWMU CS-7). Wastewater from the SM/PP Facility, formerly conveyed to the WD Building by the Waste Disposal Pipeline (SWMU MI-2), is transported by tanker truck (Ref. 66, p. 1-22).

Date of Start-up: Waste collection vehicles have been used since the 1950s.

Date of Closure: The vehicles are still in operation.

Wastes Managed: The hand carts and fork lifts are used for indoor transport drums of hazardous wastes generated at the site. Wastes transported in the step and box vans include primarily containerized pyrotechnic and explosive wastes (D003). Cargo and stake bed trucks move drummed hazardous wastes from points of generation to the Hazardous Waste Storage Area. Tank trucks transport a plutonium and acid wastewater slurry from the SM/PP Facility to the WD Building. An analysis of the slurry for hazardous constituents is not available, however detectable concentrations of toxic metals are known to be in the sludge produced from the treatment of the slurry (Ref. 85).

Release Controls: Hand carts and fork lifts are used indoors for manually transporting single drums over short distances. Drums are typically loaded onto the Waste Transport Vehicles with the hand carts. No special release controls were observed. The step and box vans are completely enclosed to prevent exposure of pyrotechnic and explosive waste containers to sunlight and precipitation. Both vehicles have explosive placards on the exterior with no other special markings or beacons. Drums are restrained on the bed of the stake bed truck by removable sidewalls. No such controls are available on the cargo truck (Ref. 84). These trucks have no special markings or beacons.

Waste transport routes are designated for each Waste Transport Vehicle. Intersections along these routes are marked with warning signs with flashing beacons, and traffic signal lights (Ref. 66). There were no release controls to prevent spilled liquid wastes from running off the roadways via storm drains to the Plant Drainage Ditch (Ref. 96). Many of the roads used for transport of these wastes are constructed of gravel and deteriorating asphalt or concrete (Ref. 66).

History of Releases: There were no releases noted from the Waste Transport Vehicles in the file information or observed during the VSI.

Conclusions: <u>Soil/Groundwater</u>: The potential for release to soil and groundwater during routine transport is low; however, in the event of a roadway accident and a release from a truck, particularly liquid wastes, the potential for release to soil and groundwater adjacent to or beneath the roadways is high. This is because there are no roadway release controls and many of the roads are composed of gravel or deteriorating concrete or asphalt.

<u>Surface Water</u>: The potential for release to surface water during routine waste transport activities is low since all wastes are containerized; however, in the event of a roadway accident, there is a high potential for releases to surface water since runoff from the vehicle roadways is directed to the Plant Drainage Ditch.

<u>Air</u>: The potential for releases to the air is low since all wastes are containerized while

being transported in the Waste Transport Vehicles.

Subsurface Gas: The potential for generation of subsurface gas is moderate in the event of a release of volatile wastes. There are no release controls on the roadways and many roads are constructed of gravel or deteriorating asphalt or concrete.

37. WASTE TRANSPORT VEHICLES

37.1. SITE HISTORY

37.1.1. Description of Waste Transport Vehicles

Waste transport vehicles used at the site include hand carts, fork lifts, a modified step van, box truck, cargo bed truck, stake bed truck and a tank truck. The hand carts are used indoors to transport drummed wastes. The step van and box van transport explosive wastes in containers from various onsite locations to the open burn area. Drummed hazardous wastes are transported by a stake bed truck and a cargo bed truck to the hazardous waste storage area. Wastewater (plutonium and acid slurry) from the SM/PP facility, formerly conveyed to the WD Building by the waste disposal pipeline, is transported by tanker truck. The slurry contains detectable amounts of toxic metals (Kearney 1988).

The hand carts and fork lifts transport drums of a variety of hazardous wastes. Wastes transported in the step and box vans include primarily containerized pyrotechnic and explosive wastes. Cargo and stake bed trucks move various hazardous wastes from their point of generation to the hazardous waste storage area.

Hand carts and fork lifts transport waste drums over short distances. Drums are typically loaded onto vehicles with the handcarts. No special release controls were observed during a visual site inspection (Kearney 1988). Step and box vans are completely enclosed to prevent exposure of pyrotechnic waste containers to sunlight or precipitation. Drums are restrained on the bed of stake bed truck by removable sidewalls. Waste transport routes are designated for each waste transport vehicle. Intersections are marked with warning signs and traffic signal lights. No release controls were observed to prevent spilled wastes from running off the roadways via storm drains to the plant drainage ditch (Kearney 1988).

No releases have been documented and no evidence of releases was observed during a visual site inspection (Kearney 1988). Potential releases would most likely occur during a traffic accident involving a waste transport vehicle.

37.1.2. Potential Waste Transport Vehicles Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the waste transport vehicles.

37.2. FIELD INVESTIGATION

Any releases associated with the waste transport vehicles should ultimately reach the plant drainage ditch, which is being investigated as part of the Radioactively Contaminated Sols, Operable Unit 5. No specific releases have been observed; therefore, no additional sampling is required for scoping.

40. Unit Information:

A. Unit Name: Cooling Tower Basins

Period of Operation: Unknown

Waste Type: Cooling tower additives, including algaecides, organics, and sodium hydroxides.

Hazardous Constituents: Unknown

Regulatory Status: Unknown (but may be regulated under an NPDES permit).

B. Unit Description: The existence of this unit is inferred from correspondence between DOE and Ohio EPA (Ref. 57) concerning the characteristics of additives used in cooling tower and boiler systems. The following chemicals are listed in the correspondence:

- o ANCO Algaecide No. 1, Andersen Chemical Company (EPA Registration No. 3931-3);
- o 2-benzyl-4-chlorophenol;
- o aqueous solution of 2-benzyl-4-chlorophenol and sodium hydroxide;
- o Siltex, Andersen Chemical Company;
- o ANCO Microbicide 77, Andersen Chemical Company (EPA Registration
- o 5-chloro-2 methyl-4-isothiazolin-3-one;
- o 2-methyl-4-isothiazolin-3-one;
- o cooling water treatment - CSA - Andersen Chemical Company; and
- o organo-phosphonate, triazol, polyacrylate;

No other information concerning this unit was available.

Additional Information Needed:

1. Numbers of units and locations
2. Capacity of cooling tower basins
3. Waste volumes
4. Waste analysis
5. Disposition of wastes
6. Dates of operation

Unit No.:	MI-8
Unit Name:	Cooling Tower Basins (4)
Unit Description:	The Cooling Tower Basins are small, above-ground impoundments located beneath the four cooling towers at the facility. The basins collect cooling tower blowdown and discharge it to the Plant Drainage Ditch (SWMU MI-1) or recycle it back into the non-contact cooling system. The basins are constructed of concrete or metal with typical dimensions of approximately 30 feet by 15 feet, and one to three feet deep. The facility representative did not know if solids ever accumulate in the cooling tower basins or if the basins are ever cleaned out (Ref. 84).
Date of Start-up:	Unknown.
Date of Closure:	The units are still in operation.
Wastes Managed:	The cooling water contains additives including algacides, rust inhibitors such as zinc chromate, organics, and sodium hydroxide (Ref. 57). The following chemical additives are listed in the file information.

- o ANCO Algaecide No. 1, Andersen Chemical Company (EPA Registration No. 3931-3);
- o 2-benzyl-4-chlorophenol;
- o aqueous solution of 21-benzyl-4-chlorophenol and sodium hydroxide;
- o Siltex, Andersen Chemical Company;
- o ANCO Microbicide 77, Andersen Chemical Company (EPA Registration);
- o 5-chloro-2 methyl-4-isothiazolin-3-one;
- o 2-methyl-4-isothiazolin-3-one;

- o cooling water treatment - CSA - Andersen Chemical Company; and
- o organo-phosphonate, triazol, polyacrylate.

Release Controls:	Several inches of freeboard were observed in the basins during the VSI. Water collected in the basins is immediately pumped to the Plant Drainage Ditch or recycled back into the facility's cooling system. The ground surface adjacent to and beneath the basins was covered with asphalt.	
History of Releases:	There were no releases noted in the file information or observed during the VSI. No stains were observed on the side of the basins or on the surrounding ground surface.	
Conclusions:	<u>Soil/Groundwater</u>:	The potential for release to soil and groundwater is low. There is adequate freeboard maintained in the basins and the soil adjacent to the basins is covered.
	<u>Surface Water</u>:	Cooling tower blowdown is discharged from the basins to the Miami-Erie Canal via the Plant Drainage Ditch, Retention Basin and Overflow Pond.
	<u>Air</u>:	The potential for release to air is low due to the relatively dilute and non-volatile nature of the liquid.
	<u>Subsurface Gas</u>:	There is no potential for generation of subsurface gas since all wastes are contained above-ground in the basins.

38. COOLING TOWER BASINS

38.1. SITE HISTORY

38.1.1. Description of Cooling Tower Basins

The cooling tower basins are small, above-ground impoundments located beneath the four cooling towers at the facility (Figure 16.1). The basins collect cooling tower blowdown and discharge it to the plant drainage ditch or recycle it back into the non-contact cooling system. The basins are constructed of concrete or metal with typical dimensions of approximately 30 ft by 15 ft, and depths of 1 to 3 ft. It is not known whether solids accumulate in the basins or if they are ever cleaned out (Kearney 1988). The cooling water contains additives including algacides, rust inhibitors such as zinc chromate, organics, and sodium hydroxide.

The unit is still in operation. Several inches of freeboard were observed in each of the basins during a visual site inspection (Kearney 1988). Water collected in the basins is immediately discharged to the plant drainage ditch or recycled back into the facility's cooling system. The ground surface adjacent to and beneath the basins is covered with asphalt. No releases have been documented and no evidence of releases was observed during a visual site inspection (Kearney 1988). No stains were observed on the side of the basins or on the surrounding ground surface. Water collected in the basins is immediately discharged to the plant drainage ditch or recycled back into the facility's cooling system.

38.1.2. Potential Cooling Tower Basins Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the cooling tower basins.

38.2. FIELD INVESTIGATION

No sampling of the cooling tower basins is planned during this limited field investigation. The plant drainage ditch that receives discharge from the cooling tower basins is being sampled as part of the Radioactively Contaminated Soil Operable Unit RI/FS.

21. Unit Information:

A. Unit Name: Glass Melt Furnace

Period of Operation: Unknown

Waste Type: Selected hazardous wastes and radioactive mixed wastes (Ref. 66, p. 4-9).

Hazardous Constituents: (See Ref. 66, Tables C-1, C-2, App. C)

Regulatory Status: RCRA regulated

B. Unit Description: The Glass Melt Furnace is located in an addition to the west side of the liquid Waste Disposal (WD) Facility (SWMU 11). The addition is 57 feet by 24 feet constructed of reinforced concrete to ground level. The side walls are constructed of concrete block and reinforced concrete beams are provided at the top of the walls. The roof is concrete slab which spans the concrete walls (Ref. 66, p. 4-9). The incinerator is an electrically heated glass melter (Pyro-Converter™) purchased from Penberthy Electromelt International, Inc. The unit is equipped with a gas tight outer skin for radioactivity control and a hopper with a screw feed which supplies 23 kg/hr of shredded dry waste to the furnace. The screw feeder shaft is water cooled to minimize the possibility of ignition. Another feed system is used to convey ion exchange resins to the furnace. It consists of a vibrating hopper and a small screw feeder. The furnace is an elongated chamber designed to provide residence time in a high-temperature zone to combustion gases and particles passing through it. The upper chamber walls are constructed of fire brick and the ceiling is formed of cast refractory block. The entire furnace is lined with firebrick. A molten glass pool on the bottom of the chamber entraps most organics and immobilizes toxic substances and radionuclides. Ash from incompletely burned wastes falls to the bottom of the chamber and becomes incorporated into the molten glass. A water seal forms a pressure relief valve for the furnace. The seal is vented to the atmosphere through an HEPA filter (Ref. 66, p. 4-10).

Gases exit the chamber at the end opposite the feeder and enter the wet off-gas system consisting of primary and secondary wet scrubbing equipment and a high efficiency filter (SWMUs 43-51). Scrub liquid is recycled and provides a caustic solution for the system.

Unit No.: MI-9

Unit Name: Glass Melter Feed Drum

Unit Description: The Glass Melter Feed Drum is located approximately ten feet from the Glass Melter Furnace (SWMU IN-1) on the second story of the WD Building Annex. The drum is used to contain inorganic wastes which are fed to the furnace via an overhead pipe. The drum is a metal 55-gallon drum positioned on a two-foot high metal stand over the concrete floor (Ref. 84).

Date of Start-up: 1981.

Date of Closure: The unit is still in operation.

Wastes Managed: The drum contains shredded dry inorganic hazardous wastes and radioactive mixed wastes generated by on-site activities.

Release Controls: The drum is covered loosely with a metal lid. There is also a drain in the concrete floor approximately three feet from the drum. Washwater from the floor and spills from the Feed Drum are collected by the drain and discharged to the Alpha Wastewater Treatment System (SWMU WD-2) via the Glass Melter Room Sump (SWMU SU-1).

History of Releases: No releases were noted in the file information. During the VSI, the sides of the drum and floor surrounding the drum was stained, apparently from past releases. No releases were occurring during the VSI.

Conclusions: Soil/Groundwater: There is no potential for release to soil and groundwater since the drum is located indoors over a concrete floor slab. Any releases from the drum to the floor of the building are washed to the Alpha Wastewater Treatment System via the Glass Melter Room Sump.

Surface Water: The potential for release to surface water is low. There are no direct discharges to the Miami-Erie Canal or Great Miami River. Floor washdown water is treated by the Alpha Wastewater Treatment system prior to discharge to the river.

Air: The potential for release to the air is low. The drum is covered and contains no volatile wastes.

Subsurface Gas: There is no potential for generation of subsurface gas. The drum is located indoors on a concrete slab, two stories above natural soil.

39. GLASS MELTER FEED DRUM

39.1. SITE HISTORY

39.1.1. Description of Glass Melter Feed Drum

The glass melter feed drum is located approximately 10 ft from the glass melter furnace (section 43), on the second story of the WD Building annex (Figure 16.1). The drum is used to contain dry, inorganic, hazardous wastes, and mixed wastes that are fed to the furnace through an overhead pipe. The drum is a 55-gallon drum positioned on a 2-ft-high metal stand over the concrete floor. The unit is still in operation.

The drum is covered loosely with a metal lid. There is also a drain in the concrete floor approximately 3 ft from the drum. Washwater from the floor and spills from the feed drum are collected by the drain and discharged to the alpha wastewater treatment system by way of the glass melter room sump (section 13) No releases have been documented, although during a visual site inspection, the sides of the drum and floor surrounding the drum were stained, apparently from past releases (Kearney 1988).

39.1.2. Potential Glass Melter Feed Drum Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the glass melter feed drum.

39.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

Unit No.: MI-10

Unit Name: Trash Dumpsters

Unit Description: Trash Dumpsters are rectangular metal containers located throughout the facility in many locations for collection of general trash. Many of the dumpsters are approximately seven feet long, four feet wide, and four feet high with an approximate capacity of two to five cubic yards. Trash is transported off-site for disposal (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The dumpsters are still in service.

Wastes Managed: The dumpsters are used for collection of general trash generated from on-site activities. The file information indicates this waste collection system is well organized but small quantities of laboratory chemicals find their way into the trash (Ref. 81, p. 4-14).

Release Controls: The Trash Dumpsters are metal and wastes are covered with plastic or a metal lid. Many of the dumpsters are located on asphalt or concrete pads. Runoff from these areas is discharged to the storm drains.

History of Releases: There were no releases from the Trash Dumpsters noted in the file information. During the VSI, stains were observed on the asphalt pad beneath the dumpster near Building A.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is low since wastes are contained in the metal dumpster. The soil is further protected from releases by the asphalt or concrete pad.

Surface Water: There is a moderate potential for release to surface water. Runoff from the stained areas adjacent to the dumpster is discharged into the storm sewer to the Plant Drainage Ditch.

Air: The potential for release to the air is low due to the relatively non-volatile nature of the wastes.

Subsurface Gas: There is no potential for generation of subsurface gas from these units. Wastes are contained completely above-ground in the metal dumpsters.

40. TRASH DUMPSTERS

40.1. SITE HISTORY

40.1.1. Description of Trash Dumpsters

The trash dumpsters are rectangular metal containers with plastic or metal lids, used for the collection of general trash at many locations throughout the facility. Many of the dumpsters are approximately 7 ft long, 4 ft wide, and 4 ft high, with an approximate capacity of 2 to 5 yd^3. Trash is transported offsite for disposal. The dumpsters are still in service. Many of the dumpsters are located on asphalt or concrete pads.

No releases have been documented. Stains were observed on the asphalt pad beneath the dumpster near Building A (Figure 16.1) during a visual site inspection (Kearney 1988). Runoff from these areas is discharged to the storm drains and on to the plant drainage ditch. An organized waste collection system is in place and is generally effective.

40.1.2. Potential Trash Dumpsters Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the trash dumpsters.

40.2. FIELD INVESTIGATION

Any releases associated with the trash dumpsters should ultimately reach the plant drainage ditch. The plant drainage ditch will be sampled as part of the Radioactively Contaminated Soil Operable Unit. No specific releases have been observed; therefore, no additional sampling is required for scoping.

Unit No.: MI-12

Unit Name: Vapor Degreaser

Unit Description: The Vapor Degreaser is located in the plating shop in the M Building. Small machined metal parts are cleaned by solvent vapors produced in the chamber of the degreaser. Approximate dimensions of the metal chamber are three feet long, two feet wide and four feet deep. Spent solvents and vapors are retained in the degreaser. The unit has a 15-gallon solvent capacity (Ref. 84).

Date of Start-up: Late 1970s.

Date of Closure: The unit is still in service.

Wastes Managed: The wastes produced by this unit are spent solvents. A facility representative indicated the solvent used in the Vapor Degreaser is Perclene D (Ref. 84).

Release Controls: The unit is fully enclosed with a metal lid when in operation. The spent solvents and vapors are contained in the cleaning chamber. Spent solvent is transferred to a drum and transported to the Hazardous Waste Storage Area (SWMU CS-7). There are no wastewater streams discharged to the storm or sanitary sewer. The floor of the building is constructed of concrete with curbing to contain spills from the entire plating shop.

History of Releases: No releases were noted in the file information or observed during the VSI. The Vapor Degreaser was not in operation at the time of the inspection.

Conclusions: Soil/Groundwater: The potential for release to soil and groundwater is low. Spent solvents are retained in the unit and any releases would be collected on the curbed concrete floor of the building.

Surface Water: There is no potential for release to surface water due to the release controls associated with the unit. Spent solvents are retained in the chamber of the unit and any releases would be collected on the curbed concrete floor of the building.

Air: The potential for release to the air is low. The unit's lid is closed during operation and it designed to keep the vapors and spent solvents in the cleaning chamber.

Subsurface Gas: There is no potential for generation of subsurface gas from this indoor, above-ground unit.

41. VAPOR DEGREASER

41.1. SITE HISTORY

41.1.1. Description of Vapor Degreaser

The vapor degreaser is located in the plating shop in the M Building (Figure 16.1). Small machined metal parts are cleaned by solvent vapors produced in the chamber of the degreaser. Approximate dimensions of the metal chamber are 3 ft long, 2 ft wide, and 4 ft deep. Spent solvents and vapors are retained in the degreaser. The unit has a 15-gallon solvent capacity. A facility representative indicated the solvent used in the vapor degreaser is perchloroethylene (tetrachloroethene) (Kearney 1988). The unit is still in operation and is fully enclosed with a metal lid when in operation. Spent solvent is transferred to a drum and transported to the hazardous storage area. No wastewater streams discharge to the storm or sanitary sewer. The floor of the building is constructed of concrete with curbing to contain spills from the entire plating shop.

41.1.2. Potential Vapor Degreaser Contaminants

No releases have been documented and no evidence of releases was observed during a visual site inspection (Kearney 1988). Any releases would be collected on the curbed concrete floor of the building. Therefore, no sampling of the vapor degreaser is planned during this limited field investigation.

41.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

Unit No.: CS-19

Unit Name: SW Building Drum Staging Area

Unit Description: The SW Building Drum Staging Area is located near the SW Building. The area was surrounded by metal grid sidewalls and underlain by a concrete pad. The concrete pad was sloped down the hill toward the SD Building. There was no curbing surrounding the unit. Two waste oil drums, a fiberpack drain, and one antifreeze drum were observed outside the walls of the staging area during the VSI (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The unit is still in service.

Wastes Managed: The staging area was intended for storage of asbestos materials but is currently used for drum storage of hazardous wastes. Drums of waste oil and antifreeze were observed outside the staging area walls (Ref. 84).

Release Controls: All wastes were contained inside closed 55-gallon drums on a concrete pad. There was no curbing on the pad to collect runoff and potential drum releases. The drums outside the unit were not protected from sunlight and precipitation.

History of Releases: There were no releases noted in the file information or observed during the VSI. The fiber packed drum was stained and appeared to be deteriorating.

Conclusions: <u>Soil/Groundwater</u>: The potential for soil and groundwater releases is low to moderate. The drums are underlain by a concrete pad but there is no curbing to prevent drum leaks from releasing liquids to the adjacent soil. Drums outside the fenced area are exposed to rainfall and subject to corrosion.

<u>Surface Water</u>: The potential for release to surface water is

also low to moderate. Releases from the drums and runoff from the concrete pad would be subject to release to the Plant Drainage Ditch.

Air: The potential for release to the air is low since all drums in the area are closed-topped.

Subsurface Gas: The potential for generation of subsurface gas is low. The drums are stored above-ground on a concrete pad. No releases to adjacent soil were observed. If releases from the drums occurred, there is a moderate potential for gas generation since there is no curbing to confine these releases to the surface of the pad.

42. SW BUILDING DRUM STAGING AREA

42.1. SITE HISTORY

42.1.1. Description of SW Building Drum Staging Area

The SW Building drum staging area is surrounded by metal grid sidewalls and underlain by a concrete pad (Figure 16.1). The concrete pad is sloped downhill. There is no curbing surrounding the unit. Two waste oil drums, a fiberpack drain, and one antifreeze drum were observed outside the walls of the staging area during a visual site inspection (Kearney 1988). The unit is still in operation. The staging area was intended for storage of asbestos materials but is currently used for drum storage of various types of hazardous wastes. All wastes are contained inside closed drums on a concrete pad.

42.1.2. Potential SW Building Drum Staging Area Contaminants

No releases have been documented, and no evidence of releases was observed during a visual site inspection (Kearney 1988).

42.2. FIELD INVESTIGATION

The RFA recommended no further action beyond considering secondary containment (Kearney 1988). No additional sampling of the SW Building drum staging area is required for scoping.

Unit No.: IN-1

Unit Name: Glass Melter Furnace

Unit Description: The Glass Melt Furnace is a RCRA-regulated unit located in the WD Building Annex. The addition is 57 feet by 24 feet and is constructed of reinforced concrete to ground level. The side walls are constructed of concrete block and reinforced concrete beams are provided at the top of the walls. The roof is a concrete slab which spans the concrete walls (Ref. 66, p. 4-9).

The incinerator is an electrically heated glass melter (Pyro-Converter) purchased from Penberthy Electromelt International, Inc. The unit is equipped with a gas tight outer skin for radioactivity control and a hopper with a screw feed which can supply 23 kg/hr of shredded dry waste to the furnace. The screw feeder shaft is water cooled to minimize the possibility of ignition. Another feed system is used to convey ion exchange resins to the furnace. It consists of a vibrating hopper and a small screw feeder (Ref. 66).

The furnace is an elongated chamber designed to provide residence time in a high-temperature zone to combustion gases and particles passing through it. The upper chamber walls are constructed of fire brick and the ceiling is formed of cast refractory block. The entire furnace is positioned on a metal stand raised approximately three feet above the floor of the building. A molten glass pool on the bottom of the chamber entraps most organics and immobilizes toxic substances and radionuclides. Ash from incompletely burned wastes falls to the bottom of the chamber and becomes incorporated into the molten glass. A water seal forms a pressure relief valve for the furnace. The seal is vented to the atmosphere through an HEPA filter (Ref. 66, p. 4-10). Glass melting is initiated by a 4,000,000 Btu/hr propane-fire burner. Air for combustion is supplied through ports in the chamber side walls (Ref. 66).

Gases exit the chamber at the end opposite the feeder and enter the wet off-gas system consisting of primary and secondary wet scrubbing equipment and a high efficiency filter (SWMUs AP-1 through AP-9). Scrub liquid is recycled and provides a caustic solution for the system (Ref. 66).

Date of Start-up:	The furnace was first operated in 1981.
Date of Closure:	Facility representatives are attempting to obtain a permit from the EPA Region V and Ohio EPA.
Wastes Managed:	The Glass Melter Furnace is used to incinerate various hazardous wastes and radioactive mixed wastes generated by on-site activities. A complete list of these wastes is provided in Table 2, Attachment 4 (Ref. 66, Tables C-1, C-2; App. C).
Release Controls:	The Glass Melter Furnace is located indoors on the second floor of the WD Building over a concrete floor slab. The floor drains discharge wash water from the floor beneath the unit to the Glass Melter Sump (SWMU SU-1) located on the first floor of the WD Building. Air emissions from the melter are discharged to the off-gas treatment system.
History of Releases:	There were no releases noted in the file information or observed during the VSI. The floor beneath the furnace was clean and dry.

Conclusions:	Soil/Groundwater:	There is no potential for release to soil or groundwater since the furnace is located indoors over a concrete floor slab on the second story of the WD Building. Any releases to the floor of the building are washed down to the WD Building Sump.
	Surface Water:	The potential for releases to surface water is low. There are no direct discharges from the furnace to the river. Floor washdown water is collected in the Glass Melter Sump and treated by the WD Wastewater Treatment System before discharge to the river.
	Air:	The potential for releases to the air is low.

All furnace emissions are treated prior to discharge to the atmosphere.

Subsurface Gas: There is no potential for generation of subsurface gas. The furnace is located indoors, two floors above native soil beneath the foundation of the building.

43. GLASS MELTER FURNACE

43.1. SITE HISTORY

43.1.1. Description of Glass Melter Furnace

The glass melter furnace is a RCRA-regulated unit located in the WD Building annex (Figure 16.1). The annex is 57 ft by 24 ft and is constructed of reinforced concrete to ground level. The incinerator is an electrically heated glass melter equipped with a gas-tight outer skin for radioactivity control and a hopper with a screw feed. The screw feed can supply 23 kg/hour of shredded dry waste to the furnace.

The furnace is an elongated chamber designed to provide residence time in a high-temperature zone to combust gases and particles passing through it. The upper chamber walls are constructed of firebrick and the ceiling is formed of cast refractory block. The entire furnace is positioned on a metal stand raised approximately 3 ft above the floor of the building. The glass melter furnace is used to incinerate various hazardous wastes and radioactive mixed wastes generated by onsite activities. A molten glass pool on the bottom of the chamber entraps most organics and immobilizes toxic substances and radionuclides. Ash from incompletely burned wastes falls to the bottom of the chamber and becomes incorporated into the molten glass. A water seal forms a pressure relief valve for the furnace. The seal is vented to the atmosphere through a high efficiency particulate air (HEPA) filter. Glass melting is initiated by a 4,000,000-Btu/hour propane-fire burner. Air for combustion is supplied through ports in the chamber side walls.

Gases exit the chamber at the end opposite the feeder and enter the wet off-gas system consisting of primary and secondary wet scrubbing equipment and a high-efficiency filter. Scrub liquid is recycled and provides a caustic solution for the system.

The furnace is no longer in operation and a closure permit is pending (Kearney 1988). The furnace is located indoors over a concrete floor slab. The floor drains discharge wash water from the floor beneath the unit to the glass melter sump located on the first floor of the WD Building. Air emissions from the melter were discharged to the off-gas treatment system.

43.1.2. Potential Glass Melter Furnace Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment at the glass melter furnace.

43.2. FIELD INVESTIGATION

The RFA recommended no further action (Kearney 1988), and no potential environmental contaminants have been identified. No additional sampling is required for scoping.

43. Unit Information:

A. Unit Name: Glass Melter Off-Gas Deluge Tank
Period of Operation: Unknown
Waste Type: Off gases from Glass Melt Furnace (SWMU 21)
Hazardous Constituents: POHCs, metals, HCI, PAH
Regulatory Status: Unknown

B. Unit Description: This unit is the first component of the off-gas scrubber system for the Glass Melt Furnace. Figures 5 and 6 (Ref. 66) show the position of this unit in the incineration treatment system. It is unclear if this unit is equivalent to the Scrub Tank identified in Figure 4-5 (Ref. 66). The unit is located in the WD Building Annex. The unit is a vertical stainless steel tank. Four spray units inject caustic solution counter-current to the ascending gases. The tank drains directly to the Recycle Tank (SWMU 46) on which it rests (Ref. 66, p. 4-13). This system is inspected hourly when in use.

Additional Information Needed:

1. Capacity and dimensions
2. Results of destruction removal efficiency
3. Dates of operation
4. Regulatory status

44. Unit Information:

A. Unit Name: Off-Gas Venturi Scrubber
Period of Operation: Unknown
Waste Type: Off-gases from Glass Melt Furnace (SWMU 21)
Hazardous Constituents: POHCs, metals, HCI, PAH
Regulatory Status: Unknown

B. Unit Description: Gases form the Deluge Tank (SWMU 43) are scrubbed in a high-energy venturi scrubber. Figures 4-4 and 4-5 of Ref. 66 show the unit in the context of the incineration treatment system. A partial removal efficiency of 99% by weight for an inlet gas particle loading rate of 1.15g/m^3 requires a water pressure differential of 104 cm (Ref. 66). Gases and entrained droplets exit the bottom of the unit and enter the Cyclone Demister (SWMU 45) at its base. Scrubber inlet and outlet temperatures are 324°F and 168°F, respectively. Inlet and outflow velocities are 34 feet per second (FPS) and 75 FPS, respectively. Inlet and outlet flow rates (in DSCFM) are 208 and 292, respectively. Destruction removal efficiencies (DREs) for all principle organic hazardous constituents (POHCs) in the entire scrubber system in test burns ranged from 99.999% to 99.9999999. Modal DRE values for the test burns were equal to 99.999999%. Particulate control efficiencies ranged from 60 to 95% in test runs (Ref. 66). This unit is inspected hourly when in use.

Additional Information Needed:

1. Regulatory status
2. Dimensions and materials of construction
3. Dates of operation

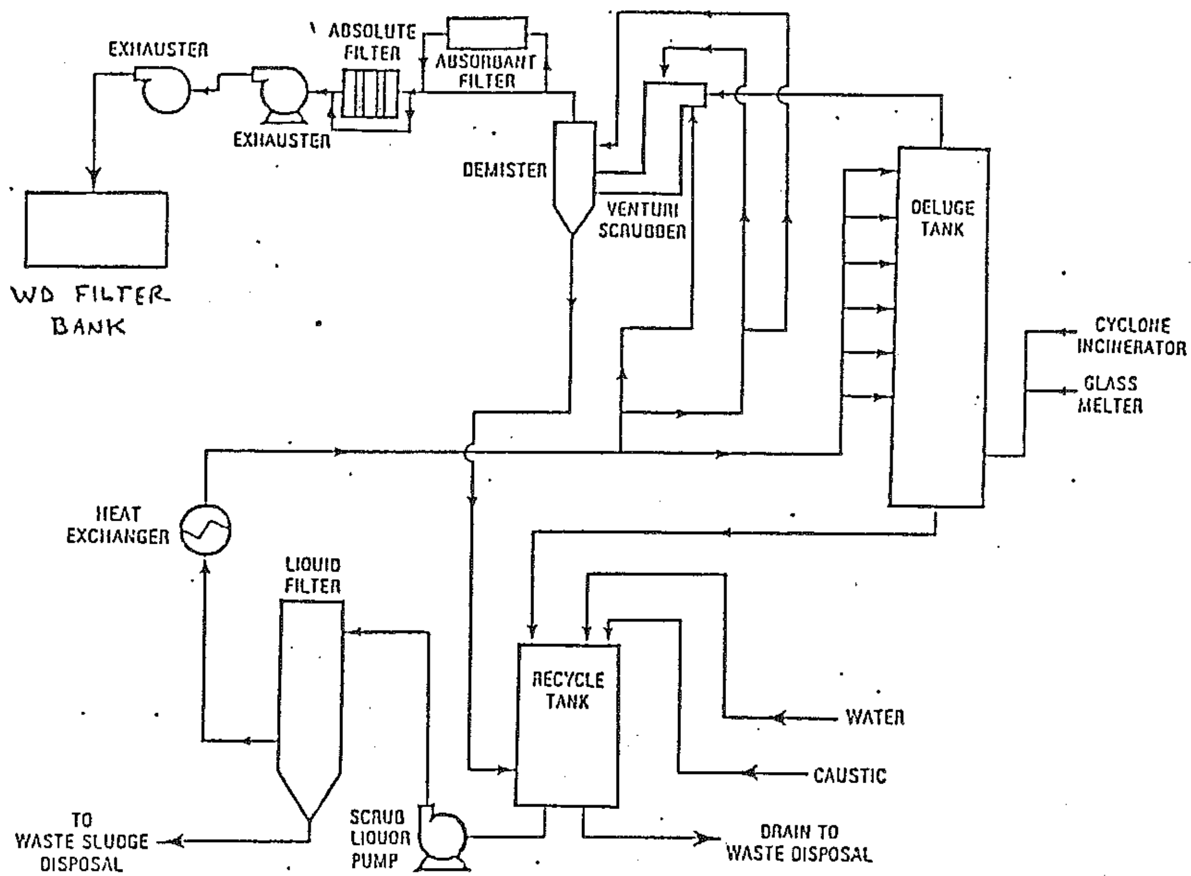

Figure 6 Wet offgas system.

PROCESS FLOW DIAGRAM

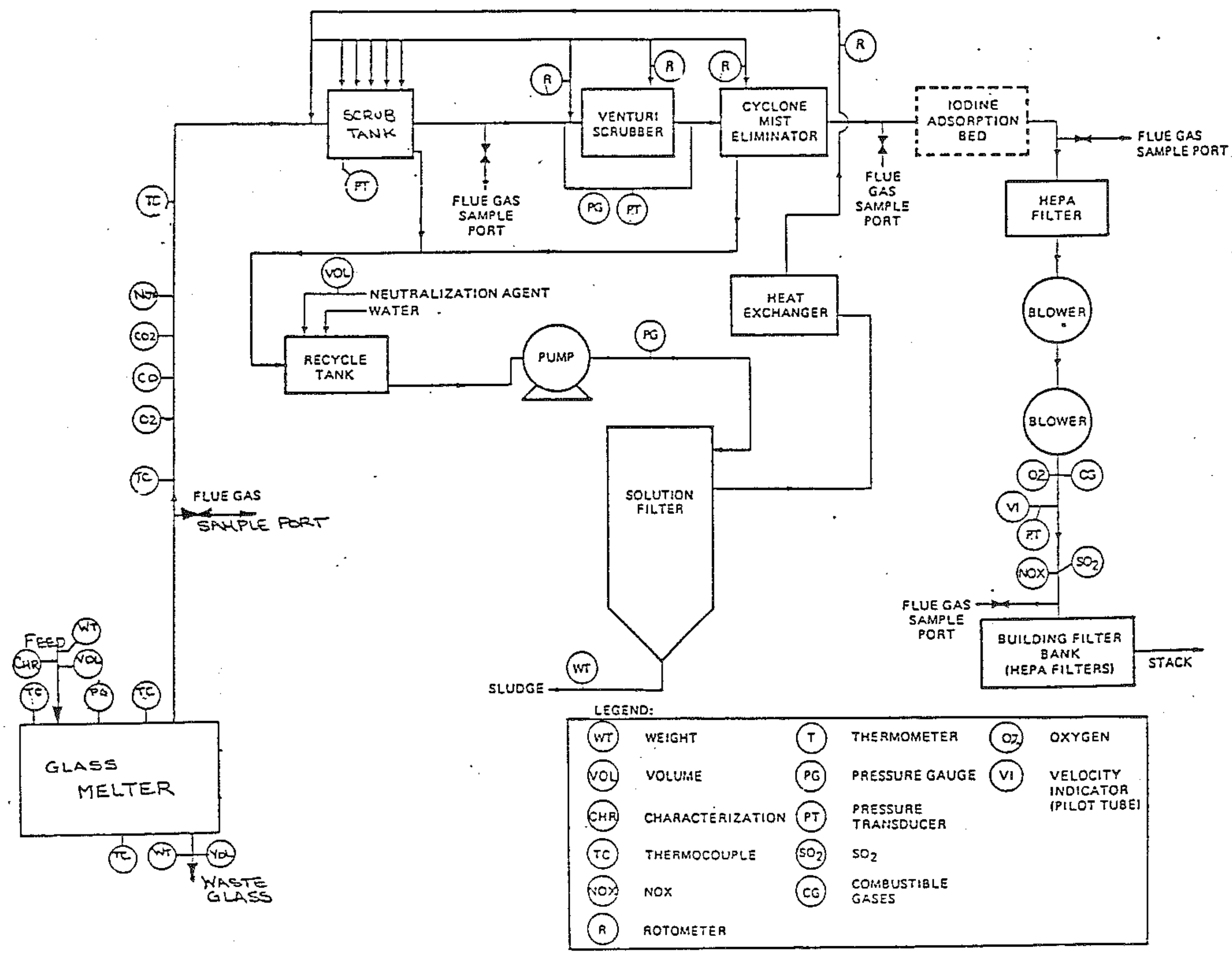

Figure 7 Glass Melter

45. Unit Information:

A. Unit Name: Off-Gas Cyclone Demister
   Period of Operation: Unknown
   Waste Type: Off-gases and entrained droplets from Off-Gas Venturi Scrubber (SWMU 44)
   Hazardous Constituents: POHCs, metals, HCI, PAH
   Regulatory Status: Unknown

B. Unit Description: Off-gases and entrained droplets from the Off-Gas Venturi Scrubber enter the base of this unit. Water sprays from the liquid mixture to the conical base of the unit into the Off-Gas Recycle Tank (SWMU 46) (Ref. 66, p. 4-13). Exit gases are routed to a nuclear grade high efficiency (HEPA) filter (SWMU 47). Figures 4-4 and 4-5 of Ref. 66 show the unit in the context of the other components of the incineration treatment system. This unit is inspected hourly when in use.

   Additional Information Needed:

   1. Regulatory status
   2. Dimensions and construction
   3. Dates of operation
   4. Release controls

46. Unit Information:

A. Unit Name: Off-Gas Recycle Tank
   Period of Operation: Unknown
   Waste Type: Liquids from the Off-Gas Venturi Scrubber (SWMU 44), Off-Gas Cyclone Demister (SWMU 45), and Deluge Tank (SWMU 43).
   Hazardous Constituents: Unknown
   Regulatory Status: Unknown

B. Unit Description: This system, consisting of a stainless steel tank, provides for initial solution make-up, solution storage, a reservoir for temperature and pH moderation in the scrub liquor system, and a head for the recycle of make-up water for the three off-gas scrubber components. The unit receives drainage (by gravity) for the off-gas system components, including the Venturi Scrubber (SWMU 44), Cyclone Demister (SWMU 45), and Deluge Tank (SWMU 43). A pH probe maintains a pH in the range of 8-10. The recycled make-up water is also routed through a vertical Leaf Solution Filter (SWMU 49), a heat exchanger, and a strainer (SWMU 50) (Ref. 66, p. 4-14). Figure 4-4 shows an outlet from this unit to the waste disposal system (SWMU 14) as well. This system is inspected hourly when in use.

   Additional Information Needed:

   1. Dimensions and construction
   2. Waste analysis
   3. Regulatory status
   4. Dates of operation
   5. Release controls

44. AIR POLLUTION CONTROL UNITS: OFF-GAS TREATMENT SYSTEM

44.1. SITE HISTORY

44.1.1. Description of Off-Gas Treatment System

The off-gas treatment system consists of 7 components used to treat air and wastewater discharge from the glass melter furnace. The unit is located on the second floor in the WD Building annex. The dimensions of the annex are approximately 40 ft by 20 ft, with a ceiling approximately 20 ft high (Figure 16.1).

Individual components of the system include the

- deluge tank,
- venturi scrubber,
- cyclone demister,
- HEPA filter,
- WD filter bank,
- recycle tank, and
- leaf solution tank.

The off-gas treatment system receives emissions from the glass melter furnace. Constituents in the emissions include metals, hydrochloric acid, polyaromatic hydrocarbons, and principle organic hazardous compounds. These combustion emissions are first directed to the deluge tank where spray units inject a caustic solution counter-current to the ascending gases in order to remove the contaminants. The deluge tank discharges treated emissions to the venturi scrubber and wastewater to the recycle tank located beneath it.

Gases enter the venturi scrubber from the deluge tank where spray nozzles deliver a caustic solution in fine droplets to the throat of the unit. Inside the unit, waste gases are swirled tangentially, and the liquid and particulate matter is entrained into droplets that can be removed in the cyclone demister.

The flow rate of the droplets and gases is increased by the circulating motion of the gas created in the cyclone demister. The circulating motion also entrains the gas in the liquid. This solution is then discharged to the recycle tank. Treated gases are discharged from the cyclone demister to a HEPA filter.

The HEPA filter is a fabric filter that removes small particulate matter remaining in the dry off-gas emissions. The HEPA filter then discharges the gases by way of two exhausters to the WD filter bank.

The WD filter bank is the final component of the off-gas treatment system. The unit is composed of several HEPA filters that remove small particulates remaining in the dry off-gas emissions before the emissions exit to the atmosphere. The WD filter bank is a completely enclosed unit located on the roof of the WD Building annex.

All wastewater generated in the off-gas treatment system is discharged to the recycle tank. The tank is a fully-enclosed stainless steel tank that provides initial solution makeup to the deluge tank, provides solution storage from the deluge tank, serves as a reservoir for temperature and pH moderation, and provides a head for the recycling of makeup water for the venturi scrubber and cyclone demister. All wastewater in the tank is either recycled into the system or is discharged to the alpha wastewater treatment system. The recycled makeup water is also routed through the vertical leaf solution filter, a heat exchanger, and a strainer (section 12) prior to discharge to the alpha wastewater treatment system.

The off-gas treatment system is still in service and is a completely enclosed indoor unit located on the second floor of the annex. The entire off-gas treatment system is shut down automatically in the event of flow rate or temperature excursions. Any releases resulting from a rupture failure would be collected in the floor drains and routed to the alpha wastewater treatment system. All components in the system are inspected hourly when in use.

44.1.2. <u>Potential Off-Gas Treatment System Contaminants</u>

No releases have been documented and no evidence of releases was observed during a visual site inspection (Kearney 1988). The components of the system appeared to be in good condition. Air emissions are discharged from the WD filter bank and are regulated by RAPCA. Wastewater from the system, or any potential releases from the system, would be routed to the alpha wastewater treatment system. Wastewater discharged from the alpha wastewater treatment system is sampled and analyzed in accordance with NPDES permit No. IT000005.

44.2. FIELD INVESTIGATION

The RFA recommended no further action for the off-gas treatment system other than continued compliance with RAPCA regulations (Kearney 1988); therefore, no additional sampling is required for scoping.

45. EPOXY RESIN DISPOSAL

45.1. SITE HISTORY

45.1.1. Description of Epoxy Resin Disposal

Epoxy resin is used in minute quantities in components manufactured in Building 49 (Figure 16.1). Old and leftover quantities of resin are then disposed of in the general trash. The quantities of epoxy resin are very small.

45.1.2. Potential Epoxy Resin Disposal Contaminants

No releases have been documented or observed; therefore, there are no known contaminants released to the environment from epoxy resin disposal.

45.2. FIELD INVESTIGATION

The only recommendation of the RFA relative to epoxy resin disposal was to attempt to segregate the waste epoxy resin from general trash; no sampling was recommended (Kearney 1988). Because there is no documented or observed release, no additional sampling is required for scoping.

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